Tivoli®

IBM Tivoli Storage Productivity Center for Replication for System z

Version 4.2

Problem Determination Guide

GC27-2320-02

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Note
Before using this information and the product it supports, read the information in "Notices" on page 63.

Edition notice

This edition applies to version 4, release 2 of IBM Tivoli Storage Productivity Center for Replication for System z and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC27-2320-01.

Contents

About this guide

This section briefly describes the audience, content, and organization of this book, and provides details related to the IBM® Tivoli® Storage Productivity Center for Replication information suite.

This guide provides problem determination and troubleshooting information for the varieties of IBM Tivoli Storage Productivity Center for Replication:

- IBM Tivoli Storage Productivity Center for Replication Two Site Business Continuity
- IBM Tivoli Storage Productivity Center for Replication Three Site Business Continuity
- IBM Tivoli Storage Productivity Center for Replication Basic Edition for System z®
- IBM Tivoli Storage Productivity Center for Replication for System z

IBM Tivoli Storage Productivity Center for Replication is supported on the following platforms:

- AIX® V5.3 ML3 and AIX 6.1
- Red Hat Enterprise Linux 4 Update and Red Hat Enterprise Linux 5 AS
- Windows Datacenter Edition and Windows 2003 Enterprise Edition
- Windows Server 2008 Standard Edition and Windows Server 2008 Enterprise Edition
- z/OS® V1.9 or later

Who should use this guide

This guide is for administrators or users who determine and troubleshoot problems in IBM Tivoli Storage Productivity Center for Replication.

Administrators and users should be familiar with the following topics:

- General principles of AIX, Linux, Windows, and the z/OS operating systems
- SAN concepts
- IBM Tivoli Storage Productivity Center for Replication copy services concepts
- IBM Database 2 (DB2®) Universal Database (UDB)
- Apache Derby 10.3
- Simple Network Management Protocol (SNMP) concepts

Accessing the IBM Tivoli Storage Productivity Center for Replication Information Center

This topic explains how to access the IBM Tivoli Storage Productivity Center for Replication Information Center.

You can access the information center in the following ways:

- On the publications CD, a readme.txt file describes how to start the information center depending on platform and mode.

- The IBM Tivoli Storage Productivity Center for Replication graphical user interface includes a link to the information center.
- Go to the Web at http://publib.boulder.ibm.com/infocenter/tivihelp/v4r1/index.jsp:

Publications and related information

This topic lists the publications in the IBM Tivoli Storage Productivity Center for Replication library and other related publications.

Information Centers

You can browse product documentation on the Internet. From the IBM Tivoli Storage Productivity Center for Replication for System z Information Center at:

http://publib.boulder.ibm.com/infocenter/tivihelp/v4r1/index.jsp

Publications

The IBM Publications Center Web Site offers customized search functions to help you find the publications that you need. Some publications are available for you to view or download free of charge. You can also order publications. The publications center displays prices in your local currency. You can access the IBM Publications Center on the web at www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss

The IBM Publications Center Web site offers you a notification system for IBM publications. Register and you can create your own profile of publications that interest you. The publications notification system sends you a daily e-mail that contains information about new or revised publications that are based on your profile. Access the publications notification system from the IBM Publications Center on the web at www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss to subscribe.

These publications that make up the IBM Tivoli Storage Productivity Center for Replication for System z library.

IBM Tivoli Storage Productivity Center for Replication for System z Installation and Configuration Guide **(SC27-2321)**
This guide contains instructions for installing and configuring the product on z/OS.

Program Directory for IBM Tivoli Storage Productivity Center for Replication Basic Edition for System z **(GI11-8958)**
This Program Directory includes installation instructions associated with IBM Tivoli Storage Productivity Center for Replication Basic Edition for System z.

Program Directory for IBM Tivoli Storage Productivity Center for Replication for System z **(GI11-8960)**
This Program Directory presents information concerning the material and procedures associated with the installation of IBM Tivoli Storage Productivity Center for Replication for System z.

Program Directory for IBM WebSphere® Application Server OEM Edition **(GI11-4326)**
This Program Directory presents information related to installing IBM WebSphere Application Server OEM Edition for z/OS V6.1.0.

IBM WebSphere Application Server OEM Edition for z/OS Configuration Guide **(GA32-0630)**

This guide contains configuration instructions associated with IBM WebSphere Application Server OEM Edition for z/OS.

IBM Tivoli Storage Productivity Center for Replication for System z User's Guide **(SC27-2322)**

This guide contains task-oriented instructions for using the product graphical user interface (GUI) to manage copy services.

IBM Tivoli Storage Productivity Center for Replication for System z Command-Line Interface User's Guide **(SC27-2323)**

This guide provides information about how to use the product's command-line interface (CLI).

IBM Tivoli Storage Productivity Center for Replication for System z Problem Determination Guide **(GC27-2320)**

This guide assists administrators or users who are troubleshooting problems with the product.

Redbooks and white papers

Performance Monitoring and Best Practices for WebSphere on z/OS **(SG24-7269)**

This IBM Redbooks® publication provides a structure that you can use to set up an environment that is tuned to meet best performance and catch eventual performance bottlenecks.

DB2 for z/OS and WebSphere: The Perfect Couple **(SG24-6319)**

This IBM Redbooks publication provides a broad understanding of the installation, configuration, and use of the IBM DB2 Universal Driver for SQLJ and JDBC in a DB2 for z/OS and OS/390® Version 7, and DB2 for z/OS Version 8 environment, with IBM WebSphere Application Server for z/OS for z/OS Version 5.02. It describes both type 2 and type 4 connectivity (including the XA transaction support) from a WebSphere Application Server on z/OS to a DB2 for z/OS and OS/390 database server.

Performance and tuning tips for WebSphere Application Server for z/OS

This IBM publication contains performance and tuning tips for z/OS , tuning for storage systems that run on WebSphere Application Server including DB2, CICS® RACF®, TCP/IP and MQSeries/Java Messaging Services (JMS), as well as tuning tips for WebSphere Application Server runtime environment.

Web resources

Listed here are the websites and information center topics that relate to IBM Tivoli Storage Productivity Center for Replication.

Websites

- IBM Tivoli Storage Productivity Center

  www.ibm.com/systems/storage/software/center/standard/index.html

  This website describes the feature, benefits, and specifications of Tivoli Storage Productivity Center. It also provides a link to product support, data sheets, resource library, and white papers.
- Tivoli Storage Productivity Center for Replication

  www.ibm.com/systems/storage/software/center/replication/index.html

This website describes the feature, benefits, and specifications of Tivoli Storage Productivity Center for Replication. It also provides a link to the Software Online Catalog purchase the product and licenses.

- Tivoli Storage Productivity Center Technical Support

  www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Productivity_Center_Standard_Edition

  This website provides links to downloads and documentation for all currently supported versions of Tivoli Storage Productivity Center and Tivoli Storage Productivity Center for Replication.
- Supported Storage Products List

  http://www-01.ibm.com/support/docview.wss?uid=swg21386446

  This website provides links to the supported storage products for each version of Tivoli Storage Productivity Center for Replication.
- IBM WebSphere Application Server

  www.ibm.com/software/webservers/appserv/was/

  This website describes the IBM WebSphere Application Server offerings and provides links for downloading a trial version, purchasing IBM WebSphere Application Server, and viewing online publication and demos.
- IBM DB2 Software

  www.ibm.com/software/data/db2/

  This website describes the DB2 offerings and provides links for downloading a trial version, purchasing DB2, and viewing analyst reports, online publication, and demos.
- IBM System Storage® Disk Systems

  www.ibm.com/servers/storage/disk/

  This website provides links to learn more about the IBM System Storage disk systems products and offerings, including DS6000™ and DS8000®. It also provides links for viewing support and services, software and solutions, and other resources.
- IBM System Storage SAN Volume Controller

  www.ibm.com/servers/storage/software/virtualization/svc/index.html

  This website describes the SAN Volume Controller offerings and provides links for purchasing SAN Volume Controller and viewing online publication, white papers, and case studies.
- System z (and z/OS)

  www.ibm.com/systems/z/

  This website provides links to learn more about IBM System z offerings and software. It also includes information about upcoming webcasts, blogs, and demos.

Forums

- Tivoli Forums

  www.ibm.com/developerworks/forums/tivoli_forums.jspa

  This website provides a forum that you can use to discuss issues pertaining to Tivoli Storage Productivity Center, Tivoli Storage Productivity Center for Replication, and other Tivoli products. This website includes a link for obtaining the forum using a Rich Site Summary (RSS) feed.
- Technical Exchange Webcasts

  www-01.ibm.com/software/sysmgmt/products/support/supp_tech_exch.html

This forum to join in webcasts during technical experts share their knowledge and answer your questions. Visit this site often to see upcoming topics and presenters or to listen to previous webcasts.

Providing feedback about publications

Your feedback is important to help IBM provide the highest quality information. You can provide comments or suggestions about the documentation from the IBM Tivoli Storage Productivity Center for Replication Information Center.

Go to the information center at http://publib.boulder.ibm.com/infocenter/tivihelp/v4r1/index.jsp and click the **Feedback** link at the bottom of the information center Welcome page or topic pages.

Chapter 1. Troubleshooting problems

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and explain how to resolve the problem.

The first step in the troubleshooting process is to describe the problem completely. Problem descriptions help you and the IBM Support person know where to start to find the cause of the problem. This step includes asking yourself basic questions:

- What are the symptoms of the problem?
- Where does the problem occur?
- When does the problem occur?
- Under which conditions does the problem occur?
- Can the problem be reproduced?

The answers to these questions typically lead to a good description of the problem, and that is the best way to start down the path of problem resolution.

What are the symptoms of the problem?

When starting to describe a problem, the most obvious question is "What is the problem?" This might seem like a straightforward question; however, you can break it down into several more-focused questions that create a more descriptive picture of the problem. These questions can include:

- Who, or what, is reporting the problem?
- What are the error codes and messages?
- How does the system fail? For example, is it a loop, hang, crash, performance degradation, or incorrect result?
- What is the business impact of the problem?

Where does the problem occur?

Determining where the problem originates is not always easy, but it is one of the most important steps in resolving a problem. Many layers of technology can exist between the reporting and failing components. Networks, disks, and drivers are only a few of the components to consider when you are investigating problems.

The following questions help you to focus on where the problem occurs to isolate the problem layer:

- Is the problem specific to one platform or operating system, or is it common across multiple platforms or operating systems?
- Is the current environment and configuration supported?

Remember that if one layer reports the problem, the problem does not necessarily originate in that layer. Part of identifying where a problem originates is understanding the environment in which it exists. Take some time to completely describe the problem environment, including the operating system and version, all corresponding software and versions, and hardware information. Confirm that you are running within an environment that is a supported configuration; many problems can be traced back to incompatible levels of software that are not

intended to run together or have not been fully tested together.

When does the problem occur?

Develop a detailed timeline of events leading up to a failure, especially for those cases that are one-time occurrences. You can most easily do this by working backward: Start at the time an error was reported (as precisely as possible, even down to the millisecond), and work backward through the available logs and information. Typically, you need to look only as far as the first suspicious event that you find in a diagnostic log; however, this is not always easy to do and takes practice. Knowing when to stop looking is especially difficult when multiple layers of technology are involved, and when each has its own diagnostic information.

To develop a detailed timeline of events, answer these questions:

- Does the problem happen only at a certain time of day or night?
- How often does the problem happen?
- What sequence of events leads up to the time that the problem is reported?
- Does the problem happen after an environment change, such as upgrading or installing software or hardware?

Responding to questions like this helps to provide you with a frame of reference in which to investigate the problem.

Under which conditions does the problem occur?

Knowing which systems and applications are running at the time that a problem occurs is an important part of troubleshooting. These questions about your environment can help you to identify the root cause of the problem:

- Does the problem always occur when the same task is being performed?
- Does a certain sequence of events need to occur for the problem to surface?
- Do any other applications fail at the same time?

Answering these types of questions can help you explain the environment in which the problem occurs and correlate any dependencies. Remember that just because multiple problems might have occurred around the same time, the problems are not necessarily related.

Can the problem be reproduced?

From a troubleshooting standpoint, the ideal problem is one that can be reproduced. Typically, problems that can be reproduced have a larger set of tools or procedures at your disposal to help you investigate. Consequently, problems that you can reproduce are often easier to debug and solve. However, problems that you can reproduce can have a disadvantage: If the problem is of significant business impact, you do not want it to recur. If possible, re-create the problem in a test or development environment, which typically offers you more flexibility and control during your investigation.

- Can the problem be recreated on a test system?
- Are multiple users or applications encountering the same type of problem?
- Can the problem be recreated by running a single command, a set of commands, or a particular application, or a stand-alone application?

Chapter 2. Logs

The following information describes how to view and package logs to help you troubleshoot problems with IBM Tivoli Storage Productivity Center for Replication.

Installation log files

This topic provides the locations of the IBM Tivoli Storage Productivity Center for Replication installation log files.

The install log files are in the UNIX System Services (USS) in the `-PathPrefix-/etc/` directory.

`install_RM.log`
Installation log file for the IBM Tivoli Storage Productivity Center for Replication installation

`install_RM_err.log`
Installation error log file for the IBM Tivoli Storage Productivity Center for Replication installation. If this file is not empty (size is not 0), check this file to ensure that the installation finished successfully or to determine the error that occurred.

Runtime log files

This topic provides the locations of the IBM Tivoli Storage Productivity Center for Replication runtime log files.

The runtime logs for IBM Tivoli Storage Productivity Center for Replication are located in the *`install_root`*`/AppServer/profiles/default/logs` directory.

There are six types of log files in this directory:

dbCfgTrace.log
These files contain log messages generated when the database configuration is updated.

csmTrace.log
These files contain log messages generated by the IBM Tivoli Storage Productivity Center for Replication server component.

csmGuiTrace.log
These files contain log messages generated by the IBM Tivoli Storage Productivity Center for Replication GUI component.

csmGuiCache.log
These files contain information pertaining to the IBM Tivoli Storage Productivity Center for Replication GUI cache.

csmGuiXMLTrace.log
These files contain information pertaining to the HTTP communication between the IBM Tivoli Storage Productivity Center for Replication server and GUI.

csmMessage.log
These files contain most log entries displayed in the GUI console log panel.

Each type of log file contains different information. IBM Tivoli Storage Productivity Center for Replication is configured to generate a number of each type of log file before overwriting previous log files. The most recent log file is the one with no number in the file name, as in the examples shown above. Previous files have incremental numbers appended to the log file and name. For example, `csmTrace.log` is the most recent IBM Tivoli Storage Productivity Center for Replication server log file, `csmTrace1.log` is the previous log file, and `csmTrace2.log` is the next previous log file.

There are other logs files contained in the *install_root*`/AppServer/profiles/default/logs/essApiTrace` and *install_root*`/AppServer/profiles/default/logs/svcAPItrace` directories. The log files in these directories pertain to the CCW communication between the IBM Tivoli Storage Productivity Center for Replication server and the FCCW server resident on the ESS, DS6000, and DS8000 storage systems. There are two types of log files in these directories:

ccwTrace.log
: These files contain log messages generated by the CCW client code that communicates directly with the ESS, DS6000, and DS8000 storage systems.

ccwError.log
: These files contain error messages that were originated by the CCW client code.

SAN Volume Controller log files

This topic provides the locations of the SAN Volume Controller (SVC) trace log files.

The SVC log files are in the following directory: *install_root*`/AppServer/profiles/default/logs/svcApiTrace`

The following files are in the directory:

`svcTrace*.log`
: This file contains the trace output for SVC.

`svcError*.log`
: This file contains the output messages for SVC.

`ssh/ssh*.log`
: Logs for Secure Shell (ssh) communication for SVC.

ESS Network Interface log files

This topic provides the locations of the ESS Network Interface (ESSNI) log files.

ESSNI is the network layer used by multiple clients (such as CIM agent, dscli, and DSGUI) to communicate with and manage the ESS and DS storage system. suThe ESSNI log files are in the following directory: *install_root*`/AppServer/profiles/default/logs/essniTrace`.

The following files are in the directory:
- niClient.log
- niClient.log_bk
- niTransmission.log
- niTransmission.log_bk

IBM WebSphere Application Server log files

This topic provides the locations of the IBM WebSphere Application Server log files.

The IBM WebSphere Application Server runtime log files are in the following directory: *install_root*/AppServer/profiles/default/logs/server1

The following files are in the directory:

SystemOut.log
This file contains the output messages that have gone through embedded IBM WebSphere Application Server. This file also contains database and authentication errors.

SystemErr.log
This file contains the descriptions of all of the errors logged by embedded IBM WebSphere Application Server components. This file also contains database and authentication errors.

startServer.log
This file contains status messages relating to the embedded IBM WebSphere Application Server starting up.

stopServer.log
This file contains status messages relating to the embedded IBM WebSphere Application Server shutting down.

Viewing console messages

This topic describes how to view the console and messages.

IBM Tivoli Storage Productivity Center for Replication provides detailed information about actions taken by users, errors that occur during normal operation, and hardware error indications.

From the graphical user interface, you can view console messages by selecting **Console** in the navigation tree. You can then click the link for the specific message code to get more information on the message.

You can also get detailed information and help for specific messages in the IBM Tivoli Storage Productivity Center for Replication for System z information center at http://publib.boulder.ibm.com/infocenter/tivihelp/v4r1/index.jsp.

Packaging the log files

This topic describes how to package the log files to provide to IBM Support.

If you encounter a problem that you cannot resolve, collect a copy of the log files in to a log package. This action:

- Preserves the information required to perform detailed problem determination
- Prevents you from having to scan through messages that were recorded after the problem occurred.

If you contact IBM Support, you must provide this package.

The log package is saved as a JAR (Java Archive) file. The default location of the log package is *install_root*/AppServer/profiles/default/diagnostics.

Important: The `TPCRMInstall.log` file is not picked up by the log package. If you have any issues related to installation or upgrade, or if you have runtime issues and you have recently installed or upgraded, also send the `TPCRMInstall.log` to IBM Support.

Prerequisite: You must have Administrator privileges to perform this action.

Perform these steps to package log files using the IBM Tivoli Storage Productivity Center for Replication graphical user interface (GUI):

1. In the Tivoli Storage Productivity Center for Replication navigation tree, select **Advanced Tools** .
2. Click **Create** to create a `.jar` package file containing all log files. When the log package is created, the package file name and location on the management server is displayed as a link. You can click the link to download the log package to the server on which the web browser is running. You can also click **Display PE Packages** to download the current and previous log packages.

If the Tivoli Storage Productivity Center for Replication server is not running, you can package the logs manually by gathering all files in the *install_root*`/AppServer/profiles/default/logs` directory and subdirectories. Collect the files into a single .zip or .jar file.

Tip: To delete old log packages, log on to the management server and delete the files in the *install_root*`/AppServer/profiles/default/diagnostics` directory.

Chapter 3. Known problems and solutions

This information contains a list of known problems in IBM Tivoli Storage Productivity Center for Replication and instructions for resolving those problems.

You additional troubleshooting information, such as flashes, technical notes, and APARs, on the IBM Tivoli Storage Productivity Center Standard Edition Support Web site at http://www.ibm.com/software/sysmgmt/products/support/A151408T55817H15-troubleshoot.html.

Troubleshooting logs

The following information explains how to troubleshoot log-related problems.

Cannot create log packages

This condition occurs when users do not have the correct authorization.

Problem

A user is not able to create log packages without the correct authorization. Users must have Administrator authorization to package log files through the graphical user interface or command line interface.

Action

Ensure that the user or the user group has Administrator authorization.

Troubleshooting installation and upgrades

The following information explains how to troubleshoot problems encountered during an installation or upgrade.

IBM Tivoli Storage Productivity Center for Replication does not start after installation

This error occurs after you install IBM Tivoli Storage Productivity Center for Replication.

Problem

After IBM Tivoli Storage Productivity Center for Replication installs successfully, it does not start up correctly. This error occurs when the operating system does not shut down the embedded IBM WebSphere Application Server service correctly during the installation. If the embedded IBM WebSphere Application Server service is not shut down correctly, the installer cannot restart the IBM Tivoli Storage Productivity Center for Replication.

Action

Stop and restart the embedded IBM WebSphere Application Server.

IBM Tivoli Storage Productivity Center for Replication installation stalls when IBM WebSphere Application Server is stopped

This error might occur during the IBM Tivoli Storage Productivity Center for Replication installation.

Problem

When installing IBM Tivoli Storage Productivity Center for Replication, the installation process might stall when it attempts to stop the IBM WebSphere Application Server.

Action

Perform these steps to correct the issue:

1. From the command line, change to the *install_root*/AppServer/profiles/CSM/bin directory.
2. Enter the following commands to cancel the installation and stop the applications :

   ```
   wsadmin.bat -conntype SOAP -c "$AdminConfig stop CSM-Servlet"
   wsadmin.bat -conntype SOAP -c "$AdminConfig stop CSM-EAR"
   ```

   Note: Linux and AIX use wsadmin.sh to run scripts.
3. 3. Enter the following command to stop the IBM WebSphere Application Server server.

   ```
   stopServer.bat server1
   ```
4. Restart the installation.

Although it is not recommended, you can also stop IBM WebSphere Application Server by ending the Java process associated with it. Follow these steps:

1. Find the IBM WebSphere Application Server process ID (PID) in the *install_root*/AppServer/profiles/default/logs/server1/server1.pid file.
2. Use the PID to end the process that matches that PID.

Cannot reconnect the standby management server status after an upgrade

This condition occurs after you upgrade IBM Tivoli Storage Productivity Center for Replication from a previous release.

Problem

After an upgrade, in which you delete the database of the standby management server, you are not able to reconnect the standby management server to the active management server.

The upgrade installation wipes out all definitions from the standby management server that specified it as the standby management server. Thus, when the standby management server is restarted, it is considered an active management server with no memory of which management server it was previously a standby for. A reconnect attempt on the active management server fails because the previously defined standby management server is now active.

This situation is similar to removing the connection from the standby management server.

Likewise, you might experience a synchronization issue during an upgrade when you remove a standby management server and confirm the deletion of the database. After the upgrade, when you attempt to redefine the standby management server from the active management server, a synchronized pending status message is displayed, and then the panel shows a disconnected state. The management standby goes back to its original database configuration.

This synchronization issue can also occur any time you do the initial synchronization. During the initial synchronization, the current information in the database is saved and held until the synchronization is complete. If an error occurs during this process, the database is restored to its state before the synchronization process began by using the information that was saved.

Action

Perform these steps to resolve this issue:

- If you redefine all of the information in the database tables during installation on a standby management server, set up the high-availability function again.
- If an error occurs during the synchronization process causing the status to be disconnected or inconsistent, reconnect to reattempt the synchronization.

Click Downgrade button instead of Cancel button when upgrading

When upgrading IBM Tivoli Storage Productivity Center for Replication, click the **Downgrade** button instead of **Cancel** button.

Problem

If you see this message when upgrading IBM Tivoli Storage Productivity Center for Replication:

```
IBM Tivoli Storage Productivity Center for Replication
The currently installed version (Build: xxxx-xxxxxx) of IBM Tivoli Storage
Productivity Center for Replication is equal to or newer than the version
contained on this installation image (Build: xxxx-xxxxxx).
Choosing "Downgrade" will downgrade to the version contained on the installation
image.
"Choosing "Cancel" the installer will exit.
```

Click **Downgrade**.

If you click **Cancel**, you see error messages.

Action

See the problem description.

Troubleshooting the user interfaces

The following information explains how to troubleshoot problems related to the GUI and CLI.

Troubleshooting the graphical user interface

The following information explains how to troubleshoot GUI related problems.

Page cannot be found error occurs when starting the GUI

This condition occurs when you start the IBM Tivoli Storage Productivity Center for Replication GUI.

Problem

When you open the IBM Tivoli Storage Productivity Center for Replication GUI, you might see a network error message, such as the 404 The page cannot be found error.

Action

Ensure that ports `9080` and `9443` are not blocked by a firewall.

504: Gateway Timeout error occurs

This condition occurs when IBM Tivoli Storage Productivity Center for Replication is running on z/OS and when the GUI panel took longer than five minutes to display.

Problem

When using the GUI, a 504: Gateway Timeout error occurs. IBM Tivoli Storage Productivity Center for Replication ends with an ABEND EC3 with reason code 04130007.

Action

Perform these procedures to resolve this issue:

- Change the transaction service property by performing these steps:
  1. Start the WebSphere Application Server Console by going to the following URL:

     `https://`*`host_name`*`:`*`port`*`/ibm/console`

     where *host_name* is the host name of the management server and *port* is the port used for IBM WebSphere Application Server. You can find the port number in the *`install_root`*`/AppServer/profiles/`*`profile_name`*`/properties/portdef.props` file. The port is defined by the WC_adminhost_secure property within the file.
  2. Click **Servers** → **Application Servers** → *server_name* → **Web Container** → **Custom Properties**.
  3. Click **New**.
  4. Enter in the name as `ConnectionTimeoutResponse` and the value as `3600` for a one hour timeout, and then click **OK**.
  5. Save the changes.
  6. Restart IBM Tivoli Storage Productivity Center for Replication.

     Tip: If you also change the timeout recovery properties, wait until after you change all properties before restarting IBM Tivoli Storage Productivity Center for Replication.

- Change the timeout recovery property to lessen the negative impact of a GUI panel taking too long to load by performing these steps:
  1. Start the WebSphere Application Server Console by going to the following URL:

     `https://host_name:port/ibm/console`

     where *host_name* is the host name of the management server and *port* is the port used for IBM WebSphere Application Server. You can find the port number in the *install_root*/AppServer/profiles/*profile_name*/properties/portdef.props file. The port is defined by the WC_adminhost_secure property within the portdef.props file.
  2. Click **Servers** → **Application Servers** → **server** → **Server infrastructure** → **Administration** → **Custom Properties**.
  3. Click **New**.
  4. Enter the name as `protocol_http_timeout_output_recovery` and the value as `SESSION`, and then click **OK**.
  5. Click **New** again to create a second custom property.
  6. Enter the name as `protocol_https_timeout_output_recovery` and the value as `SESSION`, and then click **OK**.
  7. Save the changes.
  8. Restart IBM Tivoli Storage Productivity Center for Replication.

     Tip: If you also change the transaction service property, wait until after you change all properties before restarting IBM Tivoli Storage Productivity Center for Replication.
- Check the Java heap size on the management server. On z/OS, the default Java heap size is 512 MB, which supports less than 25,000 role pairs. Increasing the Java heap to 768 MB increases support to a maximum of 50,000 role pairs. See the z/OS installation and configuration guide for information about how to set the heap size.

Cannot log in to the GUI

This condition occurs when you attempt to log in to the graphical user interface.

Problem

There are a number of possible reasons for this problem:

- The management server is not started.
- Your user name is not authorized to access IBM Tivoli Storage Productivity Center for Replication.
- Your user name or password is incorrect.
- You changed the Tivoli Integrated Portal security settings but did not restart IBM Tivoli Storage Productivity Center for Replication.
- Cookies are disabled in the Web browser.

Action

Perform one or more of these steps to resolve this issue:

- Ensure that cookies are enabled for the Web browser.
- Ensure that the IBM Tivoli Storage Productivity Center for Replication server is running.
- Ensure that you are using the correct user name and password.

- Ensure that you are not using an operating system user name when IBM Tivoli Storage Productivity Center for Replication is configured for Lightweight Directory Access Protocol (LDAP) authentication, and vice versa.
- Ensure that the user name has access to log in. Log on as an administrator, click **Administration** in the navigation tree, and verify that the user name is listed in the table and has Monitor, Operator, or Administrator authorization.
- Ensure that you restarted IBM Tivoli Storage Productivity Center for Replication after changing Tivoli Integrated Portal security settings.

Cannot launch the GUI from IBM Tivoli Storage Productivity Center or Tivoli Integrated Portal

This condition occurs when you attempt to launch the IBM Tivoli Storage Productivity Center for Replication graphical user interface (GUI) IBM Tivoli Storage Productivity Center or Tivoli Integrated Portal.

Problem

If the IBM Tivoli Storage Productivity Center for Replication WebSphere Application Resource (WAR) file does not get deployed correctly into Tivoli Integrated Portal, the IBM Tivoli Storage Productivity Center for Replication launch points do not appear in Replication page of the Configuration utility in IBM Tivoli Storage Productivity Center. The launch point would also not appear in Tivoli Integrated Portal.

Action

Perform these actions to resolve this issue:

- Ensure that the client port value is the same in the `csmConnections.properties` and `rmserver.properties` files. These files are located in the *`install_root`*`/AppServer/profiles/default/properties` directory.
- Perform the following steps to manually deploy the WAR file into Tivoli Integrated Portal:
  1. In a command prompt window, change to the *`TIP_install_root`*`\bin` directory (for example, `C:\Program Files\IBM\Tivoli\tip\bin`).
  2. Enter the following command:

     ```
     wsadmin.bat -lang jython -conntype NONE
     -f "tpcr_install_root\Scripts\CSM_TIP_Install.py"
     "TIP_install_roottip\systemApps\isclite.ear"
     ```

  3. Restart Tivoli Integrated Portal.

GUI panels are partially rendered

This condition occurs after you start the GUI.

Problem

If JavaScript is disabled for your browser, the GUI panels are not rendered correctly and some content does not appear.

Action

Ensure that JavaScript is enabled for your browser.

Browser refresh rate does not change

This condition occurs when you attempt to change the browser refresh rate in Internet Explorer.

Problem

If cookies are disabled for the Web browser and you change the refresh rate in Internet Explorer, the next time you view the Advanced Tools panel in the IBM Tivoli Storage Productivity Center for Replication GUI, the refresh rate is set back to 30 seconds.

Action

Ensure that cookies are enabled for the Web browser.

The progress bar appears to be frozen

This condition occurs when you are performing an action from a wizard.

Problem

While using a wizard, the page stays frozen on an image of a progress bar.

Action

Ensure that Web animations are enabled for your browser.

Cannot communicate with the management server due to a null request

This condition occurs when viewing the GUI using Internet Explorer.

Problem

After logging in to the IBM Tivoli Storage Productivity Center for Replication GUI using Internet Explorer, you might receive the following error message: `Unable to open to communicate with server due to null data request.`

Action

Perform these steps from Internet Explorer to resolve the issue:

- IBM Tivoli Storage Productivity Center for Replication, add the URL for the IBM Tivoli Storage Productivity Center for Replication GUI to the Trusted Sites zone by performing these steps:
  1. Click **Tools** → **Internet Options**
  2. Click the **Security** tab, and then click the **Trusted site** icon.
  3. Click **Sites**.
  4. Enter the IBM Tivoli Storage Productivity Center for Replication GUI URL, and then click **Add**.
  5. Click **OK**.
- Ensure that the Active X settings are enabled by performing these steps:
  1. Click **Tools** → **Internet Options**
  2. Click the **Security** tab, and then click the **Internet** icon.
  3. Click **Custom Level**.
  4. Enable the following settings:
     – Run ActiveX controls and plug-ins
     – Script ActiveX controls marked safe for scripting

GUI layout is difficult to read and navigate after CSS is disabled

This condition occurs after disabling cascading style sheets in Firefox and Internet Explorer browsers.

Problem

If you disable the CSS, some visual artifacts might display in the Web browser, but the layout of the GUI is difficult to read and navigate.

Action

Perform these steps to resolve the issue:

- Enable cascading style sheets in the Web browser.
- If CSS must be disabled, consider using the CLI.

Wizards do not open

This condition occurs when you attempt to start a task using a wizard.

Problem

Wizard might not open if the Web browser blocks pop-up windows.

Action

Ensure that the pop-up blocker is disable in the Web browser.

To disable the pop-up blocker in Internet Explorer:

1. Click **Tools** → **Internet Options**.
2. Click the **Privacy** tab.
3. Clear the **Turn on Pop-up Blocker** check box.
4. Click **OK**.

To disable the pop-up blocker in Firefox:

1. Click **Tools** → **Options**.
2. Click the **Content** tab.
3. Clear the **Block pop-up windows** check box.
4. Click **OK**.

Health Overview panel indicates that there are no sessions

This condition occurs when viewing session status information from the Health Overview panel.

Problem

After creating one or more sessions, the Session status information in Health Overview panel is greyed out. The greyed out circle icon indicates that no sessions are active. A session that has not been started is defined but has no state.

Action

This is an expected behavior before sessions have been started. Start each session by clicking a **Start** command from the Actions menu for that session.

Opening a wizard displays the Login panel

This condition occurs when you attempt to start a task using a wizard.

Problem

When you attempt to open a wizard, the new window shows the IBM Tivoli Storage Productivity Center for Replication Login panel. Then, when you enter your user name and password, the Health Overview panel is displayed instead of the wizard that you want. This might occur when the connection to the management server is interrupted.

Action

Close the wizard window, and press Ctrl+F5 to refresh the main panel . You might need to log in again. Then, restart the wizard.

SRVE0255E errors occur when logging in to the GUI

This condition occurs when you display the IBM Tivoli Storage Productivity Center for Replication Login panel.

Problem

The following error messages might appear when you navigate to the IBM Tivoli Storage Productivity Center for Replication Login panel:

```
SRVE0255E: A WebGroup/Virtual Host to handle /CSM has not been defined.
SRVE0255E: A WebGroup/Virtual Host to handle 9.155.66.58:3080 has not been
defined.
```

This IBM WebSphere Application Server error occurs when the installation path is too long. The installation logs generate a java.io.FileNotFoundException error.

Action

Perform these steps to resolve this issue:

- Ensure that the URL was entered using the correct case (for example, `https://localhost:3443/CSM`). "CSM" must be spelled in upper case.
- Uninstall the and then reinstall IBM Tivoli Storage Productivity Center for Replication using a shorter path name.

Session status in the GUI differs from status in the storage system interfaces

This condition occurs when you monitor session status from the Sessions panel.

Problem

The session status that is shown in IBM Tivoli Storage Productivity Center for Replication differs from the status of the relationships when queried directly on the storage system using a tool such as the DSCLI or the SAN Volume Controller CLI. For example, IBM Tivoli Storage Productivity Center for Replication might show that session is Preparing, but the DSCLI might show that the session is Prepared.

Action

From the Sessions panel, select the session and click **Refresh States** from the Actions list to rediscover the status of all storage systems and hardware replications.

SVC GUI logs you out of the IBM Tivoli Storage Productivity Center for Replication GUI

This condition occurs when you run the SAN Volume Controller GUI when you are already logged in to the IBM Tivoli Storage Productivity Center for Replication GUI.

Problem

When you attempt to run the SAN Volume Controller GUI while using the IBM Tivoli Storage Productivity Center for Replication GUI, you are logged out of the IBM Tivoli Storage Productivity Center for Replication.

Action

Use two separate Web browser sessions to access the SAN Volume Controller GUI and the IBM Tivoli Storage Productivity Center for Replication GUI.

Troubleshooting the command line interface

The following information explains how to troubleshoot CLI related problems.

Cannot run a csmcli command

This condition occurs when you attempt to invoke a **csmcli** commands.

Problem

You cannot start a **csmcli** session or run a **csmcli** command.

Action

Ensure that the client port value is the same in these files:

- *install_root*/CLI/repcli.properties
- *install_root*/AppServer/profiles/default/properties/rmserver.properties

Troubleshooting management servers

The following information explains how to troubleshoot problems related to the active and standby management servers.

Troubleshooting active management servers

The following information explains how to troubleshoot problems related to the active management servers.

IBM WebSphere Application Server fails to start

This condition might occur when IBM Tivoli Storage Productivity Center for Replication runs on z/OS.

Problem

Action

1. Perform the following steps to resolve this issue:
1. Enable the IBM WebSphere Application Server to start by removing all the files from the *install_root*/AppServer/java/cache/javasharedresources directory.
2. RestartIBM WebSphere Application Server or IBM WebSphere Application Server OEM Edition for z/OS.
3. To prevent the problem from occurring again, perform the following steps:
   a. From theIBM WebSphere Application Server or IBM WebSphere Application Server OEM Edition for z/OS Integrated Solutions Console, click **Application servers** → **server1** → **Process Definition** → **Servant** → **Java Virtual Machine**.
   b. Under **Generic JVM arguments**, add `-Xshareclasses:none`
   c. Click **Apply**.
   d. Click **Application servers** → **server1** → **Process Definition** → **Adjunct** → **Java Virtual Machine**
   e. Under **Generic JVM arguments**, add `-Xshareclasses:none`.
   f. Click **Apply**.
   g. Click **Application servers** → **server1** → **Process Definition** → **Control** → **Java Virtual Machine**
   h. Under **Generic JVM arguments**, add `-Xshareclasses:none`
   i. Click **Apply**.
   j. Click **Save**.
   k. Restart IBM WebSphere Application Server or IBM WebSphere Application Server OEM Edition for z/OS.

Intermittent communication errors occur with a storage system

This condition occurs when a network interface card (NIC) is running a lower speed.

Problem

The IBM Tivoli Storage Productivity Center for Replication server is having intermittent communication errors with the storage system and an `IWNR1587E` or `IWNH1560E` error is being generated

Action

Configure the DS8000 network interface card (NIC) and the IBM Tivoli Storage Productivity Center for Replication server NIC to operate at 100 Mbps full duplex (or higher) in a private dedicated LAN. The default setting for DS8000 NIC is **auto-negotiate**, which might cause the card to operate at a lower speed. If you need assistance configuring the DS8000 NIC, contact your IBM Support.

Management server does start

This condition occurs when there is a problem with the DB2 connection.

Problem

The IBM Tivoli Storage Productivity Center for Replication server is not able to start up successfully.

Action

If you are using DB2, ensure that there is no problem with its DB2 connection.

Remote management is in the Unknown state

This condition occurs when a storage system cannot communicate with the remote management server

Problem

Action

If the storage system's connection to the remote management server is in the Unknown state for a significant amount of time, verify that:

- A firewall is not blocking port access to the remote management server.
- The client port number is the same for active and standby management servers. If the number is not the same, change the port on one of management servers to match the other.

Troubleshooting the standby management server

This information describes how to resolve problems with the standby management server.

Reconnect function fails after removing a standby management server

This condition occurs when there is no connectivity between the active management server and the standby management server, or you remove the standby management server from the active management server.

Problem

In a high-availability environment, **Reconnect** on the Management Servers panel might seem like it is not functioning in certain situations. For example, if from a standby management server you click **Remove Standby**, and the standby management server is successfully removed, and then from the active management server you click **Reconnect**, the reconnection would fail. You would receive a message similar to the following:

```
IWNR3055E [May 8, 2006 9:17:27 AM] Failed to reconnect with all the HA servers
from the server saguaro.storage.tucson.ibm.com; check each server result to
determine which ones failed and why.
```

The reconnect function does not work when the standby management server has been made into an active management server (by using a takeover command on the standby management server or by removing the standby management server). When there is no connectivity between the active management server and the standby management server, or you remove the standby management server from the active management server, the active management server does not register the state of the management server that had been defined as its standby. It displays the **Reconnect** button as operable, but a reconnection does not work because the standby management server is now an active management server.

Action

Set up management server as a standby server again.

Fatal connection error occurred

This condition occurs when IBM Tivoli Storage Productivity Center for Replication for System z with DB2.

Problem

The following error message might appear in the `syslog`:

```
+BBOO0222I: J2CA0056I: The Connection Manager received a fatal
 connection error from the Resource Adapter for resource jdbc/CSMDS.
 The exception which was received is
 com.ibm.websphere.ce.cm.StaleConnectionException: A communication
 error has been detected. Communication protocol being used:
 Reply.fill(). Communication API being used: InputStream.read().
 Location where the error was detected: insufficient data.
 Communication function detecting the error: *. Protocol specific error
 codes(s) TCP/IP SOCKETS   DB2ConnectionCorrelator:
```

Action

If this error message is in the `syslog`, perform these steps to correct the problem:

1. Stop IBM WebSphere Application Server.
2. Change the following DB2 parameters:
   - Change the **IDLE THREAD TIMEOUT** parameter on the DB2 DSNTIPR installation panel to `1980` seconds, or change the **IDTHTOIN** parameter in the DSN6FAC macro to `1980` seconds.
   - Change the **TCP/IP KEEPALIVE** parameter on the DSNTIPS DB2 installation panel to `1980` seconds, or change the **TCPKPALV** parameter in the DSN6FAC macro to `1980` seconds.
3. Restart DB2.
4. Restart IBM WebSphere Application Server.

Troubleshooting SNMP alerts

Use this information to troubleshoot problems you experience with SNMP alerts while using the IBM Tivoli Storage Productivity Center for Replication.

Cannot add the MIB file to the SNMP manager

This condition occurs when the prerequisite MIB files are not installed in your SNMP manager application.

Problem

Prerequisite MIB files must be installed in your SNMP manager application for the IBM Tivoli Storage Productivity Center for Replication MIB file to function correctly. IBM Tivoli Storage Productivity Center for Replication uses management information base (MIB) files to provide a textual description of each SNMP alert sent by IBM Tivoli Storage Productivity Center for Replication.

Action

Follow instructions provided by your SNMP manager application to configure the SNMP manager to use both the SYSAPPL-MIB.mib and ibm-TPC-Replication.mib files. These MIB files are located in the *install_root*`/Scripts` directory. They can also be found on the installation CD in the `TPCRM/CSM-Client/etc` directory.

IBM Tivoli Storage Productivity Center for Replication cannot send SNMP alerts

This condition occurs when IBM Tivoli Storage Productivity Center for Replication server cannot communicate with the SNMP manager

Problem

You receive an error message to which IBM Tivoli Storage Productivity Center for Replication cannot send alerts. This error occurs when the SNMP manager is not registered correctly in IBM Tivoli Storage Productivity Center for Replication.

Note: IBM Tivoli Storage Productivity Center for Replication sends all SNMP alerts to each registered SNMP manager. SNMP alerts are not specific to any particular session, and all alerts for any session are sent. You cannot choose to send a subset of SNMP alerts.

Action

- Ensure that you have configured IBM Tivoli Storage Productivity Center for Replication to send SNMP alerts to your SNMP manager. Use the **lssnmp** command to display a list of the SNMP managers to which SNMP alerts are sent.

  You can use the **mksnmp** command to add a specified manager to the list of servers if your SNMP manager is not found in the list.
- If the SNMP manager is configured correctly, view the csmTrace.log file for information about what might have caused this issue.

Not receiving SNMP alerts

This condition occurs when IBM Tivoli Storage Productivity Center for Replication server cannot communicate with the SNMP manager.

Problem

There are a number of possible reasons for this problem:

- The SNMP manager is not registered.
- A firewall is blocking access to the SNMP manager

Action

Perform these steps to resolve this issue:

- Ensure there is no firewalls between the IBM Tivoli Storage Productivity Center for Replication server and the SNMP manager.
- Ensure that you have configured IBM Tivoli Storage Productivity Center for Replication to send SNMP alerts to your SNMP manager. Use the **lssnmp** command to display a list of the SNMP managers to which SNMP alerts are sent.

  You can use the **mksnmp** command to add a specified manager to the list of servers if your SNMP manager is not found in the list.
- Use a third party tool to generate test SNMP alerts to confirm that your SNMP manager is configured correctly to receive SNMP alerts.
- If your SNMP manager is registered and there are no firewalls in operation, verify that IBM Tivoli Storage Productivity Center for Replication is sending

SNMP alerts. You can search the `csmTrace.logs` for the log entries that show SNMP alerts being sent out by IBM Tivoli Storage Productivity Center for Replication.

Long strings of numbers appear in the SNMP manager

This condition occurs when the MIB files are not installed in your SNMP manager application.

Problem

Only long strings of numbers appear in the Simple Network Management Protocol (SNMP) manager (for example, 1.2.3.208.2.3.0.1).

Action

IBM Tivoli Storage Productivity Center for Replication uses management information base (MIB) files to provide a textual description of each SNMP alert sent by IBM Tivoli Storage Productivity Center for Replication. You must configure the SNMP manager to use both the `SYSAPPL-MIB.mib` and `ibm-TPC-Replication.mib` files. These MIB files are located in the *`install_root`*`\Scripts` directory. Follow the directions provided by your SNMP manager application to configure it to use the MIB files.

Tip: You can also find the MIB files on the installation CD in the `TPCRM/CSM-Client/etc` directory.

Troubleshooting the DB2 database

Use this information to understand, isolate, and resolve DB2 database errors.

Some installations of IBM Tivoli Storage Productivity Center for Replication store information in a DB2 database. If you configured IBM Tivoli Storage Productivity Center for Replication to use DB2, use this information to troubleshoot the DB2 database.

Note: In version 4.1, IBM Tivoli Storage Productivity Center for Replication only supports the Derby embedded database. So, if you are installing IBM Tivoli Storage Productivity Center for Replication for the first time, and do not have any prior versions, this section does not apply to you. If you have installed previous versions and are still using DB2, this section does apply to you.

Identifying the version and service level of the database

This topic provides supported version and service levels for DB2.

To check the level information for DB2, run the **db2level** command. The following levels are supported:

- For Windows: 9.1 (or later)
- For AIX: 9.1 (or later)
- For Linux: 9.1 (or later)
- For z/OS: 9.1 (or later)

Connecting to DB2 from AIX

This topic describes a workaround if you encounter problems connecting to DB2 from AIX.

When connecting to DB2 from AIX, you might encounter the following error message:

```
SQL1224N. A database agent could not be started to service a request, or
was terminated as a result of a database system shutdown or a force command.
```

If this error occurs when you attempt to connect to DB2, it can indicate that the number of shared memory segments allowed by AIX to connect to the database has been exceeded.

When this error occurs, you need to change the DB2 configuration to increase the number of shared memory segments. An Extended Shared Memory feature can be used to resolve the problem. To enable this feature and fix the error, increase the size of the shared memory segments by completing the following steps.

Note: For DB2 V8, you must add the following lines to the <insthome>/sqllib/userprofile file, if it exists; otherwise, create a user profile file with permissions 755.

```
EXTSHM=ON
export EXTSHM
```

In this procedure, assume that DB2 is installed under `/usr/lpp/db2_07_01` to illustrate the topic. If your installation resides elsewhere, then you must work with your installation location.

1. Place the following lines near the beginning of both `/etc/rc.db2` and `<insthome>/sqllib/db2profile`, after the block comment but before any executable lines (where <insthome> is the home directory of each instance user; for example, /home/db2inst1) :

   Note: The entry is case-sensitive. Place the entry in the db2profiles of all instance users and the Admin Server user.

   ```
   EXTSHM=ON
   export EXTSHM
   ```

2. Log in as each instance user and the Admin Server user, and run the following command:

   ```
   db2set DB2ENVLIST=EXTSHM
   ```

   This sets a DB2 profile variable within each instance that causes the value of the EXTSHM environment variable to be included in the environment of the DB2 daemon processes as they are started. Defining EXTSHM in the db2profiles of each instance, which are executed at login, ensures that the variable is set in any instance-owner environment. In addition, putting the environment variable in /etc/rc.db2 ensures that the variable is set when the DB2 processes are started.

3. Reboot the system to ensure that all DB2 processes are started with EXTSHM=ON in their environment.

To automatically apply this fix to new instances when they are created in the future, add the lines that set and export EXTSHM to the file /usr/lpp/db2_07_01/cfg/db2profile. This file is copied to <insthome>sqllib/db2profile at the time the instance creation. To ensure that the DB2ENVLIST profile variable is also set the first time a new instance is used, add the following code after the variable INSTHOME is set:

```
if [ -x $INSTHOME/sqllib/adm/db2set ]
then if [ "`$INSTHOME/sqllib/adm/db2set DB2ENVLIST`" != "EXTSHM" ]
then $INSTHOME/sqllib/adm/db2set DB2ENVLIST=EXTSHM
fi
fi
```

Starting and stopping DB2

Use the DB2 Command Line Processor to start and stop DB2.

Note: If you are using the zero administration embedded repository (Apache Derby), you do not need to start or stop the repository.

To start DB2, run the **db2start** command from the DB2 Command Line Processor.

To stop DB2, run the **db2stop** command from the DB2 Command Line Processor.

Important: All connections to DB2 must be removed, or the **db2stop** command will fail. It is recommended that you stop the embedded IBM WebSphere Application Server, IBM Tivoli Storage Productivity Center for Replication, and all other applications accessing DB2 to ensure there are no connections to DB2 before attempting to stop DB2.

Accessing the DB2 command-line processor

This topic describes how to access the DB2 command-line processor.

To access the DB2 command-line processor, follow these steps:

Windows
Click **Start** → **Programs** → **IBM DB2** → **Command Line Tools** → **Command Line Processor**

AIX and Linux
Use the **db2** command.

Note: If the **db2** command is not in your path, the command in the following directory: `<DB2 installation directory>\bin`.

Using DB2 commands

This topic provides DB2 commands that you can use in your environment.

The following DB2 commands might prove useful:

Determining the DB2 release and version
From the DB2 command-line processor, type `quit` to exit from the DB2 prompt, and then enter `db2level`.

Looking up the DB2 message code
From the DB2 command-line processor DB2 prompt, type `? ErrorCode`. For example, you might type `db2=> ? sql0289`.

Connecting to a database
From the DB2 command-line processor, type the following command:
`db2=> connect to` *`database`* `user` *`user ID`* `using` *`password`*

You must supply the database name, user ID, and password.

Changing the password for a user ID
From the DB2 command-line processor, type the following command:
`db2=> connect` *`database`* `to user` *`user_ID`*`> change password`

Verifying the existence of a database
From the DB2 command-line processor, type the following command:
`db2=> list db directory`

You can also enter:

```
db2=> list db directory show details
```

Looking at the database manager configuration file
From the DB2 command-line processor, type the following command:
```
db2=> get db cfg
```

Looking at the database configuration file
From the DB2 command-line processor, type the following command:
```
db2=> get db cfg for <database>
```

Looking at the DB2 registry
From the DB2 command-line processor, type the following command:
```
db2=> quit
```

Enter this command:

```
db2set -all
```

Note: You must be out of command-line mode to issue this command.

Troubleshooting storage systems

The following information explains how to troubleshoot problems related to storage systems, including volumes and storage connections.

Troubleshooting volumes

Use this information to troubleshoot problems you experience with volume protection while using the IBM Tivoli Storage Productivity Center for Replication

Cannot protect a volume

This condition occurs when attempting to change the protection settings for a volume.

Problem

You must have Administrator privileges to change volume protection settings.

You cannot change volume protection settings for a volume that is part of a copy set in a session.

Action

Ensure that you are logged in as Administrator.

Ensure that the volume is not already in a session.

Incorrect or unexpected state on volumes in a copy set

This condition occurs while

Problem

Performing data replication actions outside of IBM Tivoli Storage Productivity Center for Replication might put volumes in a storage system in an incorrect or an unexpected state, which might lead to undesirable results.

Action

It might be possible to determine and resolve these issues by investigating the actual state of a volume using the DS Storage Manager. You can launch the DS8000 Storage Manager from the IBM Tivoli Storage Productivity Center GUI.

For the DS6000, use the SMC IP address.

Troubleshooting an Hardware Management Console configuration

Use this information to understand, isolate, and resolve Hardware Management Console problems.

Cannot connect to the DS8000 or DS6000 storage system

This condition occurs when IBM Tivoli Storage Productivity Center for Replication attempts to connect to a DS8000 or DS6000 storage system through an Hardware Management Console (HMC).

Problem

The HMC user name that is used by IBM Tivoli Storage Productivity Center for Replication to connect to DS8000 or DS6000 storage system must have the correct authorization.

Action

Ensure that you have appropriate user authority before attempt a connection using the HMC.

If you modify the user authorization on the HMC to enable IBM Tivoli Storage Productivity Center for Replication to connect to the DS8000, perform one of these steps:

- Remove the storage connection and then recreate the storage connection to the HMC.
- Restart IBM Tivoli Storage Productivity Center for Replication.

Standby management server cannot connect to the HMC

This condition occurs when the IBM Tivoli Storage Productivity Center for Replication server cannot connect to the Hardware Management Console (HMC).

Problem

The standby IBM Tivoli Storage Productivity Center for Replication server cannot connect to the HMC.

Action

Ensure that the standby management server can communicate with the HMC using the same IP address that the active management server is using to communicate.

Ensure that the standby management server has IPV6 enabled if the active management server has IPV6 enabled.

Cannot connect to the Hardware Management Console

This condition occurs during normal operation.

Problem

When you have an active session in Normal state and then modify the Hardware Management Console (HMC) to go from single to dual HMC configuration, or dual to single HMC configuration, there is a brief disconnection in communication with the hardware which causes the session to go into a Severe state before resuming Normal status. In addition, a message might appear in the console saying that you have lost connection to the DS storage system using the HMC.

Action

This disconnection is temporary. It does not indicate a problem with the HMC configuration or data, and it does not affect the state of any running sessions.

Troubleshooting ESS 800, DS6000, and DS8000 storage systems

Use this information to understand, isolate, and resolve DS6000 and DS8000 problems.

LPAR fail over results in a session in the Server state

This condition occurs during normal operation.

Problem

An LPAR on one DS8000 storage system fails over to another DS8000 storage system, resulting in sessions that appear to be in a Severe state. This occurs on an LPAR fail over when the LPAR is not quiesced. This problem can negatively affect performance when using an HMC connection or direct connection.

Action

Avoid performing actions on the session until the session returns to a normal state. Sessions return from a Severe/Prepared state to a Normal/Prepared state on their own after a fail over.

For additional information about LPAR fail overs, see the DS8000 documentation.

Quiescing and resuming an ESS storage system causes errors

This condition occurs during normal operation.

Problem

When you perform a quiesce and resume action, you might receive a different response on an ESS 800 storage system than on a DS8000 storage system.

On a DS8000 storage system, you should not see a change in the session or storage system when you run a quiesce and resume action. When you run a quiesce and resume action on an ESS 800 storage system, the following might occur:

- An IWNR2110E error code is generated.
- The storage system storage becomes disconnected
- The session goes into a severe state.
- The role pairs become unknown during the resume.

If the heartbeat is enabled and one of the above errors occurs, it will result in a freeze of I/O on the primary storage device for the duration of the LSS long busy timeout, and all pairs will be suspended.

Action

If there are ESS 800 volumes in the session, disable the Metro Mirror heartbeat on the management server before you run the quiesce and resume on the storage system.

Cannot connect to a SAN Volume Controller cluster

This condition occurs when IBM Tivoli Storage Productivity Center for Replication attempts to connect to a SAN Volume Controller cluster.

Problem

The user name that is used by IBM Tivoli Storage Productivity Center for Replication to connect to a SAN Volume Controller cluster must have the correct authorization.

Action

Perform these steps to solve this condition:

- Ensure that the firewall is not preventing the management server from communicating with the SAN Volume Controller cluster, and that the SAN Volume Controller cluster can communicate with the management server.
- Ensure that the correct user name and password is specified for the SAN Volume Controller cluster.
- Ensure that correct IP address is specified for the SAN Volume Controller cluster.

Cannot modify storage connection properties

This condition occurs when you attempt to view and modify storage system details.

Problem

You must have Administrator privileges to modify storage connection properties.

The storage system must be in the Disconnected state to change most storage connection parameters. Note that you can add a secondary HMC to an existing HMC connection without the HMC being disconnected.

Action

- Ensure that you have Administrator privileges.
- Disconnect the storage system from IBM Tivoli Storage Productivity Center for Replication.

Remote management is in the Unknown state

This condition occurs when a storage system cannot communicate with the remote management server

Problem

Action

If the storage system's connection to the remote management server is in the Unknown state for a significant amount of time, verify that:

- A firewall is not blocking port access to the remote management server.
- The client port number is the same for active and standby management servers. If the number is not the same, change the port on one of management servers to match the other.

Troubleshooting sessions and copy sets

The following information explains how to troubleshoot problems related to sessions and copy sets.

Troubleshooting copy sets

Use this information to understand, isolate, and resolve copy sets problems.

Add Copy Set wizard takes a long time to display volumes

This condition occurs when you add a copy set using the Add Copy Set wizard.

Problem

After adding a copy set, it takes a long time to populate the volumes contained in that storage system, even though the connection shows as connection is reported as connected.

The Add Copy Set wizard does not display the volumes for the storage system until all volumes are populated.

Action

No action is necessary.

Cannot select the desired storage system to add to a copy set

This condition occurs when you create a copy set.

Problem

When you add a volume to a copy set, but you might not see the storage system that you want to add from the list of available storage systems. If a site in the session *is not* associated with a specific location, all storage systems are available for that site. If a site *is* associated with a specific location, only storage systems that are assigned to the same location or storage systems that are not assign to a specific location are eligible for that volume role.

Action

Ensure that the correct sites have been assigned to each role in the session and to each storage system.

Cannot select the desired volumes when creating a copy set

This condition occurs when you create a copy set.

Problem

Each volume in a copy set must be of the same size and machine type. If the volume size and type do not match, then the volumes cannot be paired in the copy set. Non-matching volumes are not included in the pull-down list of eligible volumes.

Action

Ensure that the size and type of each volume are the same using the **lsvol -l** command.

An error message is displayed beside the copy set

This condition occurs when you create a copy set.

Problem

This error message might indicate that it was not possible to create a valid copy set for the volume. A valid copy set might not be created for the following reasons:

- The volume type and capacity of all the volumes in the copy set did not match.
- One or more of the volumes are protected.
- One or more of the volumes are Space Efficient volumes. A Space Efficient volume is allowed as the target volume role (T1) in a FlashCopy® session.
- When using the auto-generated volume pairing option to create ESS, DS6000, or DS8000 LSS-wide or storage system-wide copy sets, the volume IDs did not match.

To display detailed information about the error, click the **Show copy set** link.

Action

- Ensure that the selected volumes are of the same type and size.
- Ensure that the volumes are not protected.
- Ensure that the volumes are not Space Efficient volumes for a FlashCopy session.
- Ensure that volumes match when using the auto-matching function.

Selected volumes were not added to copy sets

This condition occurs when you use the auto-matching option to create copy sets.

Problem

If you use the auto-generated volume pairing option to create copy sets, some the H1 volumes in the logical subsystems (LSS) might not be listed in the results page. This occurs when volumes in the LSS already exist in another copy set.

Action

Ensure that volumes in the LSS were not assigned to another copy set.

Received an IWNE9435E error

This condition occurs when you attempt to import a copy set.

Problem

You received the following error when attempting to import copy sets from a CSV file

```
IWNG9998E  No copy set matches could be created.
```

Although this message is a sub-message under a global message, this error applies only to individual entries in the CSV file. Copy set matches were created for most entries, but at least one copy set match was not created. As a result, this message applies to only one specific line in the input CSV file, not the entire file. You can determine which line is affected by clicking **Next** and determining which copy sets were not added to the session.

Action

Received an IWNG9998E error

This condition occurs when you attempt to import a copy set.

Problem

You received the following error when attempting to import copy sets from a CSV file

```
IWNG9998E  An internal error has occurred.
```

This error typically occurs when one or more of the rows in the input file do not contain a valid, non-empty entry for each column. Even if the column is extra and not needed for the particular copy set type you are importing, it is necessary to have an entry in every column.

Action

Ensure that every column has an entry.

Troubleshooting HyperSwap replication

Use this information to understand, isolate, and resolve problems with HyperSwap replication.

HyperSwap session is in an unexpected state after running a Recover command

This condition occurs when you run a Recover command on a HyperSwap® session in which the standby management server is an open system or on a different sysplex.

Problem

After you run a Recover command on a HyperSwap session, the session might change to the prepared state instead of the expected target available state.

Action

To use the **Start H1>H2>H3** command on a HyperSwap session, perform the following steps:

1. Issue a **Start H1>H2>H3** command. Verify that in that HyperSwap session, the reaches are in the prepared state.

2. Add the standby management server. The standby management server can be an open system or a system that is on a different z/OS sysplex.
3. Issue a takeover from the standby management server.

   Verify that the HyperSwap session has errors indicating that it cannot communicate with the standby management server, because it cannot communicate to IOS. Because the HyperSwap configuration could not be purged, it is possible for a HyperSwap to still occur on the new active open server.
4. Shut down the previously active z/OS server.
5. Cause a HyperSwap event to occur.

   Verify that the copy sets are in the suspended state.
6. On the new active open server, disable HyperSwap: by clearing the **Manage H1-H2 with HyperSwap** property on the Session Details panel.

   Verify that the HyperSwap session now has the recover command available.
7. Verify that the hardware and IBM Tivoli Storage Productivity Center for Replication are matched and in a Prepared state.

Session is in the Severe state with multiple errors

This condition occurs during normal operation.

Problem

You perform a planned HyperSwap replication with the z/OS SETHS SWAP command. Then, the session state goes to Severe for a period of time, with multiple error messages in the console.

When an event HyperSwap replication occurs, whether by the z/OS SETHS SWAP command or an unplanned swap triggered by a permanent I/O error, IBM Tivoli Storage Productivity Center for Replication might receive suspend event notifications before it receives the HyperSwap notification. As a result, messages such as IWNR2055E might occur when a HyperSwap replication is not triggered by IBM Tivoli Storage Productivity Center for Replication. This does not indicate an error condition.

Action

No action is necessary.

RMF reports show a significant increase in false contention

This condition occurs during normal operation.

Problem

The Resource Measurement Facility (RMF) reports might show a significant increase in false contention for global ENQs. When RESERVEs have been converted to GRS Global ENQs, the ENQs may take longer to resolve if the ISGLOCK structure is too small to process each global ENQ independently.

Action

If this occurs, increase the size of the ISGLOCK structure.

For information on GRS, including guidelines about how to resize the ISGLOCK structure, see the *z/OS MVS Planning: Global Resource Serialization* documentation.

Troubleshooting Open HyperSwap replication

Use this information to understand, isolate, and resolve problems with Open HyperSwap replication.

Session that is enabled for Open HyperSwap is in the Severe state on the standby server

This condition occurs when a session that has been enabled for Open HyperSwap is running on a standby management server and the original active IBM Tivoli Storage Productivity Center for Replication management server is restarted.

Problem

You performed a takeover on the standby management server and the active management server has been shut down. A session with Open HyperSwap enabled is running on the standby server and the standby server is connected to the IBM AIX host.

The active management server is restarted and reconnects to the AIX host. The session state on the standby server goes to Severe and the following error message is displayed in the console.

```
IWNR5549E  Open HyperSwap was disabled for session session_name because another
Tivoli Storage Productivity Center for Replication server is managing
the configuration on host host_name.
```

Action

If you want to continue to use the standby management server to manage sessions, issue the **Start** command on the standby server.

If you want to use the original active management server to manage sessions, reinstate this server as the active server.

Open HyperSwap is not triggered after the AIX host is restarted

This condition occurs when a session is enabled for Open HyperSwap and the AIX host is restarted.

Problem

In the following scenario, the Open HyperSwap function does not occur when the AIX host is restarted and cannot communicate to the storage on the primary site:

1. The session is in the Prepared state, Open HyperSwap is enabled, and H1 is active.
2. The AIX host requires a restart and all devices that are associated with the session are stopped.
3. While the AIX host is restarting, there is an issue or disaster that causes a loss of communication to the primary device.
4. If there are devices for the session that are configured for auto start during the AIX host startup phase, it is possible that despite the lack of connectivity to the primary storage, the host might not trigger Open HyperSwap. In this case the host blocks all input/output (I/O) on the device because the host cannot communicate to the IBM Tivoli Storage Productivity Center for Replication server.

5. If devices are started later, the Subsystem Device Driver Path Control Module (SDDPCM) recognizes that the primary volumes are unavailable and triggers a message to Tivoli Storage Productivity Center for Replication to start the Open HyperSwap sequence.

Action

After the AIX host completes the startup process and devices are successfully started, SDDPCM can initiate Open HyperSwap.

Copy set is displayed as coupled after Terminate command has been issued or copy sets have been removed for an Open HyperSwap session

This condition occurs if an application on the IBM AIX host has opened a device and the IBM Tivoli Storage Productivity Center for Replication session for that device has been terminated or has had copy sets removed. The device is no longer associated with the session, but the copy sets are still displayed as coupled.

Problem

Copy sets are displayed as coupled when the Subsystem Device Driver Path Control Module (SDDPCM) `pcmpath query device` command is issued as shown in the following example:

```
DEV#:   4  DEVICE NAME: hdisk4  TYPE: 2107900  ALGORITHM:  Load Balance
SESSION NAME:
OS DIRECTION:     H1->H2
==========================================================================
PRIMARY   SERIAL: 11111111610 *
---------------------------
Path#      Adapter/Path Name          State     Mode     Select     Errors
    0           fscsi3/path0           OPEN   NORMAL        937          0
    1           fscsi3/path1           OPEN   NORMAL        973          0
SECONDARY SERIAL: 22222221710
---------------------------
Path#      Adapter/Path Name          State     Mode     Select     Errors
    2           fscsi1/path2           OPEN   NORMAL          0          0
    3           fscsi1/path3           OPEN   NORMAL          7          0
```

In this example, `SESSION NAME` is blank, because the device is no longer associated with the session.

Action

To decouple the copy set:

1. On the AIX host, stop the application that has opened the device.
2. Remove the device using the following command:

   `rmdev -dl hdisk`*`hdisk_number`*

   Where *hdisk_number* is the number of the hdisk (device) that you want to remove.
3. Run the `cfgmgr` command to discover the device. If you run `pcmpath query device` command, separate devices are presented for the copy set pair.

Troubleshooting Basic HyperSwap sessions

Use this information to understand, isolate, and resolve problems with Basic HyperSwap sessions.

Basic HyperSwap is composed of three components: IBM Tivoli Storage Productivity Center for Replication, System Data Mover (SDM), and IOS. Depending on the type of error, the IBM Tivoli Storage Productivity Center for Replication log package and additional information might be necessary to diagnose Basic HyperSwap problems. To increase the likelihood of collecting enough problem determination data the first time a Basic HyperSwap problem occurs, the following should be done:

- Package the log files on the management server using the IBM Tivoli Storage Productivity Center for Replication GUI.
- Collect SYSLOGs from all systems in the sysplex.
- Take dumps from all systems in the sysplex and include the HyperSwap API Address Space, the HyperSwap Management Address Space, and the IOS Address Space in the dumps.
- Issue the following commands on the primary and secondary storage systems to confirm the state of the systems as well as the current replication direction.

  D U,,,devnum,nn
  View the storage system status to see whether devices are boxed, online, or offline.

  D M=DEV(devnum)
  View details on a single storage system.

  D HS,STATUS
  View the Basic HyperSwap status.

  D HS,CONFIG(DETAIL,ALL)
  View the states of all pairs in the HyperSwap configuration.

  TSO CQUERY DEVN(devnum)
  View the Peer-to-Peer Remote Copy (PPRC) relationships and details for a specific storage system (In TSO).

Basic HyperSwap is disabled due to a volume pair error

This condition occurs during normal operation.

Problem

After starting a Basic HyperSwap session and after all pairs become full duplex, you notice that the Basic HyperSwap is not enabled and the session shows a red status. You received the following two errors:

```
IWNR5423E [timestamp] Basic HyperSwap is disabled with volume
status code [code] due to an error involving the pair with source
[source] and  target [target].

IOSHM0201I HyperSwap Configuration Load fails Reason: Configuration
Validation fails on member SY1->Reason Code: 50. Devices: 0A1D-0B1D.
```

Action

Attempt to vary offline the target pairs that are online.

See the *z/OS MVS™ System Messages* document to diagnose system problems and to find explanations of the messages.

Received IWNR1027E and IWNR2108E errors

This condition occurs when

Problem

You received the following errors:

```
IWNR1027E The runCommand for the command Start in session [session]
completed with one or more errors.

IWNR2108E A hardware error occurred while issuing the command for the
pair in session [session] for copy set [copy_set] with source [source]
and target [target]. The hardware returned an error code of [error_code].
```

The error occurs when one or more volumes in the LSS have not been varied online since the last IPL. This can also occur if a volume is boxed.

Action

To resolve this issue, vary the volumes online and repeat the operation.

Received an IWNH1221 error

This condition occurs when you are adding a ESS or DS storage system:

Problem

You received the following error while adding an ESS or DS storage system:

```
IWNH1221:  Failure to create the specified server location
[location] due to a failure in loading libANTKCCWP.so.
```

Action

1. From OMVS command line, issue the following command to issue locate the `libANTKCCWP.so` file:

   ```
   find / -name libANTKCCWP.so -type f -print
   ```

   Note: You can use the IBM WebSphere Application Serverhome directory instead of / for better performance. Verify that the file has execute permissions.
2. From the IBM WebSphere Application Server Administration Console, click **Environment** → **Shared Libraries** → **RMSharedLibraries** and verify that the path is the same as the path found in step 1, without the trailing `/libANTKCCWP.so`
3. Ensure there is a class loader that refers to the shared library:
   - From the IBM WebSphere Application Server Administration Console, click: **Servers** → **Application Servers** → **server name** → **Server Infrastructure** → **Java and Process Management** → **Class Loader**.

     Note: If there is not an existing class loader, click **New**, and create a Class loader with application class loader first order.
   - Under the class loader, click **Additional Properties** → **Shared Library References**

     Note: If RMSharedLibraries is not listed, click **Add** and select **RMSharedLibraries**. Then, apply and save the changes.
   - Restart the IBM WebSphere Application Server.

Received an IWNR1824E error

This condition occurs when you run a command on a session.

Problem

You received the following message:

```
IWNR1824E  The command against the session [session] cannot be run
because either the current active server does not have a version of z/OS that
supports Basic HyperSwap or the Basic HyperSwap process is not running.
Ensure that the Basic HyperSwap process is running.
```

Action

Basic HyperSwap requires two address spaces: the HSIB Management address space, and the HSIB API address space. You can start both of these address spaces by adding simple procedures to SYS1.PROCLIB, and then by issuing the `START procmemname` command manually, or by including the command in the COMMNDxx member of your SYS1.PARMLIB.

Received an IWNR5400E error

This condition occurs after starting a Basic HyperSwap session.

Problem

After starting a Basic HyperSwap session and after all pairs become full duplex, you notice that HyperSwap does not become enabled and the session shows a red status. You receive the following error:

```
IWNR5400E  No NED was found for the source volume [volume]. Finding
the source NED failed with return code 920.
```

Action

- Take actions on z/OS to ensure the storage system is no longer boxed, such as by varying it online, and then varying it offline.
- Use the command **d u,dasd,,devnum,nn** verity that the storage system is no longer boxed.
- After the storage system problem is resolved, issue another **Start** command on the session to resume full HyperSwap capability.

Received an IWNR5400E, IWNR5401E, or IWNR5402E error

This condition occurs during normal operation.

Problem

Messages *IWNR5400E*, *IWNR5401E* and *IWNR5402E* are specific error codes that might be prevent Basic HyperSwap session from being enabled.

Action

- Ensure the volumes are attached and have been online at least once on the z/OS system
- Likely, one or more volumes are boxed. Unbox the volumes and reissue the command.
- Ensure that the volume has at least one path accessible by z/OS.
- Ensure in call to the Basic HyperSwap Manager. Ensure the Basic HyperSwap Management & API address spaces are both started and running.

Received an IWNR5405E error

This condition occurs during HyperSwap replication.

Problem

During a HyperSwap, you receive an IWNR5405E error and a z/OS 04*xx* error with a reason code of 90.

Action

Contact IBM Technical Support for assistance on resolving this error message.

Troubleshooting FlashCopy sessions

Use this information to understand, isolate, and resolve problems with FlashCopy sessions.

Interruptions to FlashCopy sessions occur

This condition occurs during normal operation.

Problem

If an interruption occurs before a FlashCopy session has completed the background copy for all of the pairs in the session, consistency cannot be guaranteed. The following examples illustrate interruptions to a FlashCopy session that is still performing the background copy:

- DB2 stops running, for example, when maintenance is applied to it
- IBM Tivoli Storage Productivity Center for Replication is stopped, either intentionally or unintentionally

If an interruption occurs,IBM Tivoli Storage Productivity Center for Replication cannot register whether the hardware actually completed the FlashCopy operation, or whether the relationship had an error or was removed outside of IBM Tivoli Storage Productivity Center for Replication operation. This situation can occur because a FlashCopy relationship can end after the background copy is complete, and IBM Tivoli Storage Productivity Center for Replication cannot confirm that the copy actually completed.

Action

Perform these procedures to resolve this issue:

- Flash the session again.
- If DB2 looses communication, either by error or planned, restart IBM Tivoli Storage Productivity Center for Replication so that it can query the hardware again and resynchronize its states.

Received an IWNR2108E error

This condition occurs during normal operation of a FlashCopy session on the ESS/DS.

Problem

During an ESS/DS practice session, the **Flash** command fails with the following hardware errors:

```
IWNR2108E:  A hardware error occurred while issuing the
command for the pair in session mmprac for copy set [copy_set] with source
[source] and target [target]. The hardware returned an error code of 0f60
or 0f65.
```

```
x0F60: The secondary volume for an establish PPRC pair command or the target
volume for an establish FlashCopy command is in a grouped state which
implies the volume is online with a host.

x0F65: The Establish PPRC Pair command or the Establish FlashCopy command
could not complete. A target Fixed Block LUN cannot be reserved to another
initiator.
```

The **Flash** command fails if the H2 volume has a host reservation on it. The reservation must be removed from the volume before the **Flash** command can complete successfully.

Action

Remove the reservation from the host server that is attached to the volume and issue the **Flash** command again to copy the data to the H2 volumes. For a FlashCopy session, copy the data to the T1 volume.

Troubleshooting Metro Mirror sessions

Use this information to understand, isolate, and resolve problems with Metro Mirror sessions.

After you suspend a session, other session also become suspended

This condition occurs when you suspend a Metro Mirror sessions or Global Mirror session.

Problem

After you suspend a Metro Mirror or Global Mirror session, one or more other sessions also become suspended.

The suspend command or a hardware-initiated suspension of a session causes a suspend to happen to all copy sets in that session and any other copy sets that share the same Logical Subsystems (LSS) pairs. Thus, if two sessions have at least one copy set using the same source and target LSSs, a suspension of one session causes the other session to suspend as well.

IBM Tivoli Storage Productivity Center for Replication uses the hardware to carry out a suspend to guarantee data consistency. This functionality cannot be disabled.

Action

Do no create copy sets in different sessions that share the same LSS pairs.

Use the **Stop** command instead of the **Suspend** command for Metro Mirror session. The **Stop** command does not cause overlapping sessions to become suspended; however. it does not guarantee data consistency for a session.

Metro Mirror session freezes when a hardware failure is detected

This condition occurs during normal operation.

Problem

When a hardware failure is detected, the IBM Tivoli Storage Productivity Center for Replication server ensures that all data in the Metro Mirror session is consistent by issuing a hardware freeze command to all LSSs in the affected session. If the

freeze and run policy is in effect for the session when all freezes are complete, then the IBM Tivoli Storage Productivity Center for Replication server issues the run command to the same LSSs.

Note: The freeze and run sequence suspends data replication to preserve consistent data at the secondary site.

If the freeze and stop policy is in effect for the session, no updates are allowed to the H1 volumes after the freeze occurs.

Note: This might impact your host applications.

Action

All Metro Mirror sessions and copy sets are suspended

This condition occurs when the IBM Tivoli Storage Productivity Center for Replication server lost connectivity to one of the storage systems, and the Metro Mirror sessions went to a suspended state. Then, when the management server regained connectivity, all of the Metro Mirror sessions and copy sets were suspended.

Problem

If the Metro Mirror heartbeat is enabled and the storage system does not receive a heartbeat from the IBM Tivoli Storage Productivity Center for Replication server within the allotted time, the storage system itself initiates a freeze.

Action

ESS/DS storage system suspends when the server stops sending a heartbeat to it

This condition occurs during normal operation.

Problem

When storage system stops receiving Metro Mirror heartbeat for a certain period of time, the storage system performs a suspend on each of the LSS pairs in the currently running Metro Mirror sessions. This causes all copy sets in the running Metro Mirror sessions to become suspended.

Action

Starting a session does not restart pairs outside the SVC consistency group

This condition occurs when you issue a **Start** command for a Metro Mirror session or Global Mirror session with SAN Volume Controller volumes.

Problem

If you issue a **Start** command while IBM Tivoli Storage Productivity Center for Replication is processing pair state changes and suspending events from the hardware, pairs outside the SAN Volume Controller remote copy consistency group might not be restarted.

Action

Issue a **Refresh States** command for the session that contains the copy set that was not restarted. Then, issue the **Start** command to restart the pair on the hardware.

Copy sets are in the prepared state but the session is suspended

This condition occurs during a Metro Mirror session.

Problem

The IBM Tivoli Storage Productivity Center for Replication server temporarily lost connectivity to one of the storage boxes and one of the Metro Mirror sessions went to a suspended state. When the management server regained connectivity, the IBM Tivoli Storage Productivity Center for Replication GUI showed that all of the copy sets were in the Prepared state, but the session state remains in the Suspended state.

As soon as connectivity is lost, IBM Tivoli Storage Productivity Center for Replication puts Metro Mirror sessions into a Suspended state. It is possible that the connectivity was restored before the DS storage system actually issued the freeze to its logical subsystems (LSSs). Thus, replication is still running, the copy sets are prepared, and the paths exist for this session.

Action

Issue the **Start** command for the session. IBM Tivoli Storage Productivity Center for Replication will recognize the copy sets are prepared and update the session state accordingly.

Troubleshooting Global Mirror sessions

Use this information to understand, isolate, and resolve problems with Global Mirror sessions.

After you suspend a session, other session also become suspended

This condition occurs when you suspend a Metro Mirror sessions or Global Mirror session.

Problem

After you suspend a Metro Mirror or Global Mirror session, one or more other sessions also become suspended.

The suspend command or a hardware-initiated suspension of a session causes a suspend to happen to all copy sets in that session and any other copy sets that share the same Logical Subsystems (LSS) pairs. Thus, if two sessions have at least one copy set using the same source and target LSSs, a suspension of one session causes the other session to suspend as well.

IBM Tivoli Storage Productivity Center for Replication uses the hardware to carry out a suspend to guarantee data consistency. This functionality cannot be disabled.

Action

Do no create copy sets in different sessions that share the same LSS pairs.

Use the **Stop** command instead of the **Suspend** command for Metro Mirror session. The **Stop** command does not cause overlapping sessions to become suspended; however. it does not guarantee data consistency for a session.

Global Mirror session fails after suspend command is issued

This condition occurs when you suspend a Global Mirror session.

Problem

While using the Global Mirror suspend command, the sessions fails.

Action

You must have the correct license purchased and installed to activate advanced sessions such as Metro Mirror Failover/Failback, Global Mirror Failover/Failback, and Metro Global Mirror. If you have not purchased the proper license, contact your IBM Sales Representative. If you have purchased the proper license, ensure that the Advanced Installer was used and that the proper license files are found in the license directory: *install_root*/AppServer/profiles/default/license.

Existing Global Mirror sessions are not recognized

This condition occurs in environments that have migrated to a later version of IBM Tivoli Storage Productivity Center for Replication.

Problem

You have existing Global Mirror sessions in your environment that the IBM Tivoli Storage Productivity Center for Replication does not recognize.

Action

The IBM Tivoli Storage Productivity Center for Replication migration tool converts the current data replication configuration to the IBM Tivoli Storage Productivity Center for Replication configuration. See the Data Migration Utility for IBM Tivoli Storage Productivity Center for Replication website at http://www.ibm.com/support/docview.wss?uid=swg2S4000774 for information.

Starting a session does not restart pairs outside the SVC consistency group

This condition occurs when you issue a **Start** command for a Metro Mirror session or Global Mirror session with SAN Volume Controller volumes.

Problem

If you issue a **Start** command while IBM Tivoli Storage Productivity Center for Replication is processing pair state changes and suspending events from the hardware, pairs outside the SAN Volume Controller remote copy consistency group might not be restarted.

Action

Issue a **Refresh States** command for the session that contains the copy set that was not restarted. Then, issue the **Start** command to restart the pair on the hardware.

Session does not change to prepared state after session failback

This condition occurs during a Global Mirror session failback

Problem

During a Global Mirror session failback, data is copied asynchronously from H2 to H1, but the session does changes from the preparing state to the prepared state.

A consistent copy of the data on the H1 volumes cannot be guaranteed because there is no Journal volume [J1] with which to form consistency groups. Therefore, the session does not change to the prepared (green) state.

Action

When you are ready to run from the H1 site, suspend the session to copy all of the data on H2 that has not been copied to H1. When the session reaches the suspended state, the copy is complete. Then issue the **RecoverH1** command to bring the data on H1 to the target-available state so that I/O can be run against it.

Tivoli Storage Productivity Center for Replication Session is in Severe status, but Global Master state is showing as running on the Global Mirror Info tab

This condition occurs when a Global Mirror master session is created on the IBM System Storage DS8700 using the same logical subsystem (LSS) pairs as an existing master session.

Problem

The session is in Severe status and the following error message is displayed; however, the master session is displayed as running on the Global Mirror Info tab of the Session Details panel.

```
IWNR2326E  The pair in session session_name for copy set copy_set with
source source and target target could not be started because the maximum
number of allowed Global Mirror sessions on the logical subsystem has been reached.
No action was taken on this pair.
```

The Global Mirror master session is created on the DS8700; however, the master session could be empty or could be missing LSSs because some or all LSS pairs are associated with another master session on the DS8700.

Action

Do no create copy sets in different sessions that share the same LSS pairs.

Remove the session that is currently using the LSS pairs or update the copy sets in the second session so that the LSS pairs in the two sessions do not overlap.

Received an IWNR2708E error

This condition occurs when the **Recover** command is issued on a session.

Problem

You received the following error during the recover process.

```
IWNR2708E [VALUE_0] Recover Master for Hardware session VALUE_1 failed for
session VALUE_2 because the sequence numbers do not match.
```

This error indicates that a hardware error was uncovered during the recovery process, and the data on the H2 volumes is not guaranteed to be consistent. The

session status changes to Severe and the state becomes Target Available.

Action

Cannot define a new location for a session

This condition occurs when you want to assign a location to a session for site awareness.

Problem

When assigning a location to a session, you choose only from a list of locations that have already been assigned to one or more storage systems.

Action

Change the location of one or more storage systems to the location you want to associate with the session. Then assign that location to the session.

Cannot create a specific type of session

This condition occurs when you attempt to create a session.

Problem

You must have the correct license purchased and installed to use advanced session types, such as Metro Mirror Failover/Failback, Global Mirror Failover/Failback, and Metro Global Mirror.

Action

If you have not purchased the proper license, contact your IBM Sales Representative.

If you have purchased the proper license, ensure that the Advanced Installer was used and that the correct license files are found in the license directory: *install_root*/AppServer/profiles/default/license.

Cannot assign a desired location to the session roles

This condition occurs when you want to assign a location to a session for site awareness.

Problem

When assigning a location to a session role, you can choose only from a list of locations that have already been assigned to one or more storage systems.

Action

Change the location of one or more storage systems to the location you want to associate with the session. Then assign that location to the session.

Error occurred when you issue a Start command

This condition occurs when you issue a **Start** command on a session.

Problem

When a storage system becomes available, after being unavailable to the IBM Tivoli Storage Productivity Center for Replication server, it might take some time for all pairs to change from an unknown state. Do not issue a **Start** command if any of the participating pairs or any nonparticipating pairs that will become participating pairs as a result of that Start command, are in an unknown state (for example, during disaster recovery or during planned maintenance). Based on the **Start** command that you issue, you can determine which pairs will participate. For example, if the **Start** command involves all three sites in a Metro Global Mirror session (**Start H1->H2->H3** or **Start H2->H1->H3**), then there should not be any pairs in an unknown state at those sites.

Action

- Ensure that the participating pairs or any nonparticipating pairs that will become participating pairs as a result of that Start command, are not in an unknown state. Use the Role Details page in the IBM Tivoli Storage Productivity Center for Replication GUI to verify the state of the pairs.
- Evaluate the error to determine if you can fix the problem manually (for example, you might not have enough physical paths defined), and then attempt to restart.
- Remove the copy set from the session, and then add it back again.

Issuing a session command is taking 10 minutes to complete or fails continuously

This condition occurs when issuing a session command.

Action

Check the connections to your hardware. There might be a fault somewhere between IBM Tivoli Storage Productivity Center for Replication and the z/OS, HMC, or direct connections. IBM Tivoli Storage Productivity Center for Replication might take up to ten minutes to surface that the connection has been lost, and commands and queries will fail during this time frame.

If you are managing through both TCP/IP and z/OS connections, you can avoid this type of disruption by enabling Metro Mirror heartbeat functional, which causes Metro Mirror sessions to automatically suspend after the heartbeat time-out period defined on the hardware.

Starting a session generates an x0F52 error

Problem

You receive the following error when issuing a **Start** command for a session:

```
x0F52 The PPRC operation or a channel extender being used for a copy
operation is reporting an error and the command cannot be completed.
```

The peer-to-peer remote copy (PPRC) operation or a channel extender being used for a copy operation is reporting an error and the command cannot be completed due to one or more of the following conditions:

- Abnormal conditions at the secondary controller.
- Abnormal conditions related to the secondary device.

- The communications paths between the primary and remote controller are not functioning.
- Communications could not be established with the secondary control unit.

In a z/OS environment, this error might occur if

- IBM Tivoli Storage Productivity Center for Replication attempts to create a path from an Fibre Channel Protocol port to a FICON® port or vice versa. To circumvent this problem, find a valid combination of ports using the DSCLI or some other mechanism and use the IBM Tivoli Storage Productivity Center for Replication GUI or CLI to manually create the paths for this session using the compatible ports.
- Only a subset of volumes in the logical storage subsystem (LSS) that you want to manage through a z/OS connection are attached to the z/OS. The entire LSS must be attached to z/OS.

Action

After you detect and resolve the source of the problem, reissue the **Start** command.

Session does not change to the prepared state after you add copy sets

This condition occurs when you add copy sets to a suspended Metro Global Mirror session.

Problem

The Metro Global Mirror session does not change to the prepared state after you add copy sets to the suspended session.

If H2 is the production site, and data is being copied H2 to H1 to H3, and if the session becomes suspended while you are adding copy sets, the session might remain in the preparing state.

Action

To avoid this potential problem, do not add new copy sets to a suspended session until after you issue the **Start H2->H3** command.

If you do add copy sets and then issue the **Start H2->H3** command, remove the newly added copy sets. The session then changes to the prepared state, and you can add the copy sets back in.

Received an IWNR2731E error when starting a Global Mirror or Metro Global Mirror session

This condition occurs when you exceed the maximum allowable number of Global Mirror or Metro Global Mirror Master sessions.

Problem

You received the following error when attempting to start a Global Mirror or Metro Global Mirror session:

```
IWNR2731E Start failed because all source boxes already have
the maximum number of Masters defined on them.
```

You can create multiple sessions and leave them in a defined state in IBM Tivoli Storage Productivity Center for Replication for an indefinite length of time. Defined sessions use the same hardware resources, but a session does not use resources until it is started. Attempting to start a session that exceeds the maximum allowable number of Master sessions causes this error to occur. For example, the maximum number of Master sessions for IBM TotalStorage® Enterprise Storage Server® 800 is one. With IBM System Storage DS8000 R5.1, you can have 1 - 32 Master sessions.

Action

Stop one or more sessions before starting another.

Received an IWNR1587E error

This condition occurs during normal operation of a Metro Global Mirror session.

Problem

You receive the following error:

```
IWNR1587E  Session [session_name] has lost connection to device
[storage_system].
```

This error indicates that the active management server lost connection with the specified storage system.

Action

Check the Storage Systems panel in the IBM Tivoli Storage Productivity Center for Replication GUI to determine the reason of the loss of connection.

After you restart the storage system, this message might persist while the system queries all pairs on the storage system.

Received an IWNR2734E error

This condition occurs when using Global Mirror or Metro Mirror session with SAN Volume Controller (SVC) volumes.

Problem

When trying to issue **Start H2->H1** to a Global Mirror or Metro Mirror session with SAN Volume Controller (SVC) volumes, you get the following error:

```
IWNR2734E:  A create pair or start pair failed for copy set
[copy_set_id] with source [source] and target [target] in session
[session_name] because it is not possible to create or start a new pair
when the production role is [role].
```

This error indicates that the session was suspended and recovered while there were inconsistent pairs outside of the SAN Volume Controller consistency group. These inconsistent pairs were deleted during the **Recover** command and put into the Defined state. The inconsistent pairs cannot be replicated with the rest of the session while it is running H2->H1. The replication of these pairs does not start until the session is running H1->H2 again. Any pairs that are still in the SAN Volume Controller consistency group are replicated.

Action

Received an IWNR2708E error

This condition occurs when the **Recover** command is issued on a session.

Problem

You received the following error during the recover process.

```
IWNR2708E [VALUE_0] Recover Master for Hardware session VALUE_1 failed for
session VALUE_2 because the sequence numbers do not match.
```

This error indicates that a hardware error was uncovered during the recovery process, and the data on the H2 volumes is not guaranteed to be consistent. The session status changes to Severe and the state becomes Target Available.

Action

Receieved an IWNR2111E error

This condition occurs during operation of Metro Mirror or Global Mirror session with SAN Volume Controller volumes.

Problem

You get the following message when issuing the **Start** command to a Metro Mirror or Global Mirror session with SAN Volume Controller volumes.

```
IWNR2111E: [timestamp] The session cannot be started because a SAN Volume
Controller partnership between cluster [cluster_1] and cluster [cluster_2]
does not exist.
```

For inter-cluster data replication to work, a partnership must exist between the clusters you are using. IBM Tivoli Storage Productivity Center for Replication does not create this partnership.

Action

Use the SAN Volume Controller command line interface or graphical user interface to create the partnership before issuing the IBM Tivoli Storage Productivity Center for Replication **Start** command on the session.

Troubleshooting security

It is possible that errors related to users and user roles can occur. The following information explains how to troubleshoot security related problems.

A user has a higher authorization level than the assigned user role.

This condition occurs when a user attempts to perform an action.

Problem

A user might have a higher authorization level than the user role that is assigned to that user name.

Action

Determine if the user name is member of a user group that has been assigned a higher authorization level. If a user is a member of a group that is assigned a different role than the user name, the user is given permissions of the role with the greater authorization level.

Chapter 4. Collecting data for IBM Tivoli Storage Productivity Center for Replication

Sometimes you cannot solve a problem by troubleshooting the symptoms. In such cases, you need to collect diagnostic data.

Collecting data before opening a problem management record (PMR) can help you to answer the following questions:

- Do the symptoms match any known problems? If so, has a fix or workaround been published?
- Where does the problem originate?

The diagnostic data that you need to collect and the sources from which you collect that data are dependent on the type of problem that you are investigating. A base set of information is typically required for diagnosing and resolving a product-level or component-level problem. For specific symptoms, you might need to collect additional problem-specific data.

When you submit a problem to IBM Support, you typically need to provide a base set of information.

1. Capture screen shots of the GUI panel (if applicable), including:
   - Panel showing the error
   - Console panel showing time of the error and associated return code
   - Sessions panel showing state of the session
2. Record the IBM Tivoli Storage Productivity Center for Replication version and build level from the *install_root*/TPCRMInstall.log file or the GUI Login page.
3. Record the microcode release level of all storage systems involved. For SAN Volume Controller (SVC), record the SVC firmware level.
4. For installation problems gather the installation logs.

   The install log files are in the UNIX System Services (USS) in the -PathPrefix-/etc/ directory.
5. For runtime problems, gather runtime logs using one of the following three methods:
   - **Using the GUI**. Click **Advanced Tools** in the navigation tree. Then click **Create** under Package Log Files. This function collects all the log information and packages as a .JAR file. Upon successful creation of the package, the returned message indicates the location of this JAR file. The default location is *install_root*/AppServer/profiles/default/diagnostics.
   - **Using the CLI**. Run the **mklogpkg** command. Upon successful creation of the package, the returned message indicates the location of this JAR file. The default location is *install_root*/AppServer/profiles/default/diagnostics.
   - **Using manual steps**. If you are not able to package log files using the GUI or CLI, you can package the logs manually by gathering all files in the *install_root*/AppServer/profiles/default/logs directory and subdirectories. Collect the files into a single .zip or .jar file.
6. Send the data and log files to IBM ECuRep server using this Web page: http://www.ecurep.ibm.com/app/upload. Include in the complete PMR number (for example, 12345,789,002), select the platform from which the file is taken, and enter your e-mail address, and click **Continue**. Then, click **Submit**

and select the files to be uploaded. A e-mail is sent to the specified e-mail address to confirm that the file was uploaded successfully.

After you collect the appropriate diagnostic data, contact IBM Support.

Chapter 5. Searching knowledge bases

You can often find solutions to problems by searching IBM knowledge bases. Learn how to optimize your results by using available resources, support tools, and search methods and how to receive automatic updates.

Available technical resources

In addition to this information center, the following technical resources are available to help you answer questions and resolve problems:

- IBM Tivoli Storage Productivity Center for Replication technotes, flashes, and APARs (problem reports)
- IBM Tivoli Storage Productivity Center Support website at www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Productivity_Center_Standard_Edition
- Tivoli Redbooks Domain
- Tivoli support communities (forums and newsgroups)

Searching with support tools

The following tools are available to help you search IBM knowledge bases:

- **IBM Software Support Toolbar** is a browser plug-in that provides you with a mechanism to easily search IBM support sites. You can download the toolbar at: www.ibm.com/software/support/toolbar/.

Search tips

The following resources describe how to optimize your search results:

- Searching the IBM Support Web site
- Using the Google search engine

Receiving automatic updates

You can receive automatic updates in the following ways:

- **My Notifications**. To receive daily or weekly announcements through e-mail, web folder or RSS feeds regarding fixes and other support news, visit the IBM Software Support RSS Feeds website at www.ibm.com/software/support/rss/.
- **RSS feeds**. For information about RSS, including steps for getting started and a list of RSS-enabled IBM Web pages, visit the My Notifications website at www.ibm.com/support/mynotifications.

Chapter 6. Getting a fix

A product fix might be available to resolve your problem.

You can get fixes by following these steps:

1. Obtain the tools required to get the fix.
2. Determine which fix you need.
3. Download the fix. Open the download document and follow the link in the "Download package" section.
4. Apply the fix. Follow the instructions in the "Installation Instructions" section of the download document.

Chapter 7. Contacting IBM Support

IBM Support provides assistance with product defects.

Before contacting IBM Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. For information about the types of maintenance contracts available, see "Enhanced Support" page in the Software Support Handbook website at techsupport.services.ibm.com/guides/services.html.

Complete the following steps to contact IBM Support with a problem:

1. Define the problem, gather background information, and determine the severity of the problem. For help, see the "Contacting IBM" page in the Software Support Handbook website at techsupport.services.ibm.com/guides/beforecontacting.html.
2. Gather diagnostic information.
3. Submit your problem to IBM Support in one of the following ways:
   - Using IBM Support Assistant (ISA):
   - Online: Go to the IBM Tivoli Storage Productivity Center Support website at www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Productivity_Center_Standard_Edition
   - By phone: For the phone number to call in your country, go to the "Contacts" page in the Software Support Handbook website at techsupport.services.ibm.com/guides/contacts.html.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM Support web site daily, so that other users who experience the same problem can benefit from the same resolution.

Appendix. Configuration files

This topic provides default file locations for IBM® Tivoli® Storage Productivity Center configuration files.

The following table shows the default file location for each configuration file.

Configuration file	Default location
csmConnections.properties	*install_root*/AppServer/profiles/default/properties
diagnostics.properties	*install_root*/AppServer/profiles/default/properties
repcli.properties	*install_root*/CLI
rmserver.properties	*install_root*/CLI
rmserver.properties	*install_root*/AppServer/profiles/default/properties
tpcrcli-auth.properties	Template file: *install_root*/CLI Instantiated file: *home_directory*\tpcrcli-auth

csmConnections.properties file

The csmConnections.properties file contains configuration information about IBM Tivoli Storage Productivity Center for Replication graphical user interface (GUI) and management server connection information.

The csmConnections.properties file is located in the*install_root*/AppServer/profiles/default/properties directory.

This files contains the following properties:

csm.server.address
The domain name or IP address IBM Tivoli Storage Productivity Center for Replication server. The default value is localhost).

Important: This value must match the value of the **server** property in the *install_root*/CLI/repcli.properties file.

csm.server.port
The client port for the GUI to connect to the management server. The default value is 5110.

Important: This value must match the **communications.port** property in the *install_root*/AppServer/profiles/default/properties/rmserver.properties file and the **port** property in the *install_root*/CLI/repcli.properties file.

csm.server.authtype
The authentication type for the GUI to connect to the management server. The default value is certificate.

csm.server.keystore
The location of the csmGuiTrust trust file for certificate authentication of the GUI. The default value is /etc.

csm.server.certificate
The certificate ID. The default value is `csmgui`.

csm.server.standbyPort
The HTTPS port used for a standby management server. Define this property if the active and standby management servers run on two different GUI ports to ensure that the URL links to the other management server are valid. For example, if you have an active Windows management server using port `3443` for the GUI and a standby z/OS management server using port `33209` for the GUI, set this property if you want the GUIs to be able to launch the remote GUI.

diagnostics.properties file

The `diagnostics.propreties` contains configuration information about IBM Tivoli Storage Productivity Center for Replication log packages.

The `diagnostics.properties` file is located in the *install_root*`/AppServer/profiles/default/properties` directory.

Important: You must restart the IBM Tivoli Storage Productivity Center for Replication graphical user interface to activate property changes. Properties are not synchronized between the IBM Tivoli Storage Productivity Center for Replication management servers and must be maintained on each IBM Tivoli Storage Productivity Center for Replication management server.

This files contains the following properties:

sourcedir
The source directory to be used to create the IBM Tivoli Storage Productivity Center for Replication log package.

targetdir
The target directory where IBM Tivoli Storage Productivity Center for Replication log packages are to be created. The default value is *install_root*`/AppServer/profiles/default/diagnostics`.

repcli.properties file

The `repcli.properties` file contains the server and port information used to communicate with the IBM Tivoli Storage Productivity Center for Replication server and the command-line interface.

The `repcli.properties` file is located in the *install_root*`/CLI` directory by default.

Important: You must restart IBM Tivoli Storage Productivity Center for Replication to activate property changes. Properties are not synchronized between the IBM Tivoli Storage Productivity Center for Replication management servers and must be maintained on each IBM Tivoli Storage Productivity Center for Replication management server.

This files contains the following properties:

server The domain name or IP address of the IBM Tivoli Storage Productivity Center for Replication server. The default value is `localhost`.

Important: This value must match the value of the **csm.server.address** property in the *install_root*/AppServer/profiles/default/properties/csmConnections.properties file.

port The client port used by the CLI to communicate with the IBM Tivoli Storage Productivity Center for Replication server. The default value is 5110.

Important: The client port number must be the same on both management servers in a high-availability relationship. If you change the port number on one management server, you must also change it on the other.

Important: This value must match the **communications.port** property in the *install_root*/AppServer/profiles/default/properties/rmserver.properties file and the **csm.server.port property** in the *install_root*/AppServer/profiles/default/properties/csmConnections.properties file.

rmserver.properties file

The rmserver.properties contains configuration information about logging for the IBM Tivoli Storage Productivity Center for Replication command line interface.

The rmserver.properties file is located in the *install_root*/CLI directory by default.

Important: You must restart IBM Tivoli Storage Productivity Center for Replication to activate property changes. Properties are not synchronized between the IBM Tivoli Storage Productivity Center for Replication management servers and must be maintained on each IBM Tivoli Storage Productivity Center for Replication management server.

This properties files contains the following parameters:

log.file
The name of the CLI log file. The default value is csmTrace.log.

The newest log file is the name the same as this value. Subsequent log files have a number appended to the file name (for example, csmTrace1.log and csmTrace2.log)

logfile The maximum number of CLI log files that are created before old log files are overwritten. The default value is 5.

log.file.maxFileSize
The maximum size, in KB, of each CLI log file. The default value is 10240.

log.file.level
The debug level of the CLI. You can specify one of these values:
- ALL
- FATAL*
- ERROR*
- WARNING*
- INFO*
- DEBUG_MIN*
- DEBUG_MID*
- DEBUG_MAXa

rmserver.properties file

The rmserver.properties contains various configuration settings for IBM Tivoli Storage Productivity Center for Replication server.

The rmserver.properties file is located in the *install_root*/AppServer/profiles/default/properties directory by default.

Important: You must restart IBM Tivoli Storage Productivity Center for Replication to activate property changes. Properties are not synchronized between the IBM Tivoli Storage Productivity Center for Replication management servers and must be maintained on each IBM Tivoli Storage Productivity Center for Replication management server.

This properties files contains the following parameters:

log.file
The name of the IBM Tivoli Storage Productivity Center for Replication server log file. The default value is csmTrace.log

The newest log file is the name the same as this value. Subsequent log files have a number appended to the file name (for example, csmTrace1.log and csmTrace2.log).

This log file is in the *install_root*/AppServer/profiles/default/logs directory.

logfile The maximum number of IBM Tivoli Storage Productivity Center for Replication server log files that are created before old log files are overwritten. The default value is 50.

log.file.maxFileSize
The maximum size, in KB, of each IBM Tivoli Storage Productivity Center for Replication server log file. The default value is 10240.

log.file.level
The debug level of the IBM Tivoli Storage Productivity Center for Replication server. You can specify one of these values:
- ALL
- FATAL*
- ERROR*
- WARNING*
- INFO*
- DEBUG_MIN*
- DEBUG_MID*
- DEBUG_MAXa

communications.port
The client port used by the GUI and CLI to communicate with the IBM Tivoli Storage Productivity Center for Replication server. The default value is 5110.

Important: The client port number must be the same on both management servers in a high-availability relationship. If you change the port number on one management server, you must also change it on the other.

Important: This value must match the **csm.server.port** property in the *install_root*/AppServer/profiles/default/properties/

csmConnection.properties file and the **port** property in the *install_root*/CLI/repcli.properties files.

communications.haPort
The standby management server port used for communication between the active and standby management server. The default value is 5120.

Important: The standby management server port number must be the same on both management servers in a high-availability relationship. If you change the port number on one management server, you must also change it on the other.

csm.server.snmp_community_string
The SNMP community name. The default value is public.

csm.server.sus_gc_pairs_on_gm_pause
A flag that indicates whether to suspend the Global Copy pairs when a Global Mirror session is suspended. Valid values are true and false.

db.backup.location
The directory used by the **mkbackup** command to store a backup copy of the IBM Tivoli Storage Productivity Center for Replication for System z database. By default, the backup file is stored in the *install_root*/AppServer/profiles/default/database/csmdb directory.

tpcrcli-auth.properties file

The tpcrcli-auth.properties file contains authorization information for signing on to the IBM Tivoli Storage Productivity Center for Replication command line interface (CLI) automatically without entering your user name and password.

To use the automated authentication feature of the CLI, copy the template for the tpcrcli-auth.properties file from the in the *install_root*/CLI directory to the tpcr-cli directory in your home directory, and then add your user name and password.

Each time you run a CLI command or enter the CLI shell, the CLI looks for this properties file in the current user's home directory. If it finds the properties file, the CLI searches the file for the password and verifies whether it is encrypted. If it is not encrypted and it is a valid password, the CLI encrypts the password and rewrite the properties file such that there are no human readable passwords stored on the hard disk drive. If you need to change the password, edit the password in the properties file and then run a CLI command or enter the CLI shell to encrypt the new password.

This properties file must be stored in a directory named tpcr-cli in the user's home directory. For example, for a Windows, this directory is C:\Documents and Settings*user_id*\tpcr-cli\tpcrcli-auth.properties, where *user_id* is the name of the user that is using the CLI. If multiple users want to use this properties file for authentication, each user must have a separate tpcrcli-auth.properties file in their own home directory.

If the authorization properties file is not located in the correct directory, the following message is displayed when running the IBM Tivoli Storage Productivity Center for Replication command or when entering the IBM Tivoli Storage Productivity Center for Replication CLI shell:

```
|                       Could not find or open authentication file
|                       C:\Documents and Settings\Administrator\tpcr-cli\tpcrcli-auth.properties.
|                       Please authenticate manually.
```

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Program Number: 5698-B30,5698-B31

Printed in USA

GC27-2320-02