

IBM System Storage TS3500 Tape Library with ALMS



Tape System Reporter User's Guide

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Tape System Reporter User's Guide

Note:

Before using this information and the product it supports, read the information in the **Safety and environmental notices** and **Notices** sections.

Edition Notice

This edition applies to the *IBM System Storage[®] TS3500 Tape Library with ALMS Tape System Reporter User's Guide* and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

About this guide v

Safety and Environmental notices vii

Safety notices vii

Environmental notices viii

Send us your feedback ix

Summary of changes. xi

Chapter 1. IBM Tape System Reporter

overview 1

IBM Tape System Reporter prerequisites 4

Configuring Apache Derby to use the IBM Tape

System Reporter application 5

Configuring Oracle for IBM Tape System Reporter

use 8

Configuring the Java server to use IBM Tape System

Reporter 10

Installing and setting up the IBM Tape System

Reporter application on the server. 12

Installing and setting up the IBM Tape System

Reporter application on the client 15

Introducing the menu bar 18

Connecting to the database 19

Creating and deleting tables 20

Resources - deleting data in the database 21

Chapter 2. The IBM Tape System

Reporter reports 23

Monitor report 24

General SQL Query report 25

Custom report 30

Chapter 3. Installation scenarios. 33

Installation of the DB2 and Tape System Reporter

applications on the same server 33

 Installing and setup of DB2 on a server 33

 Customizing the DB2 configuration 35

 Installing the Tape System Reporter application

 on the server that has DB2 installed on it 38

 Post installation adjustments for the Tape System

 Reporter application 39

Installing the DB2 application on the server and the

Tape System Reporter application on the client 40

 Installing the IBM Data Server Runtime Client on

 the server 40

 Installing the Tape System Reporter application 41

 Customizing the Tape System Reporter

 application for use on the remote (client) server 42

Chapter 4. Report scenarios 45

Notices 51

Trademarks 52

Electronic emission notices 53

 Federal Communications Commission statement 53

 Industry Canada compliance statement 53

 European Union Electromagnetic Compatibility

 Directive 54

 People's Republic of China Class A Electronic

 Emission statement. 55

 Taiwan Class A compliance statement 55

 Taiwan contact information 55

 Japan Voluntary Control Council for Interference

 (VCCI) Class A Statement 56

 Japan Electronics and Information Technology

 Industries Association (JEITA) Statement (less

 than or equal to 20 A per phase) 56

 Japan Electronics and Information Technology

 Industries Association (JEITA) Statement (greater

 than 20 A per phase) 56

 Korean Communications Commission (KCC)

 Class A Statement 56

 Russia Electromagnetic Interference (EMI) Class

 A Statement 57

Glossary 59

Glossary 59

Index 61

About this guide

This publication introduces the IBM Tape System Reporter application and provides instructions for installing and using it.

This publication provides descriptions for the following components:

- Overview and prerequisites of the IBM Tape System Reporter application
- Setup and installation instructions for both the server and client machines
- How to use the IBM Tape System Reporter application to monitor and report trends and performance on the storage devices.

This publication is for the storage system administrator and the person who is responsible for monitoring and reporting trends and performance for your storage devices.

Safety and Environmental notices

This section contains information about safety notices that are used in this guide and environmental notices for this product.

Safety notices

Observe the safety notices when using this product. These safety notices contain danger and caution notices. These notices are sometimes accompanied by symbols that represent the severity of the safety condition.

Most danger or caution notices contain a reference number (Dxxx or Cxxx). Use the reference number to check the translation in the *IBM Systems Safety Notices*, G229-9054 manual.

The sections that follow define each type of safety notice and give examples.

Danger notice

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people. A lightning bolt symbol always accompanies a danger notice to represent a dangerous electrical condition. A sample danger notice follows:



DANGER: An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

Caution notice

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition, or to a potentially dangerous situation that might develop because of some unsafe practice. A caution notice can be accompanied by one of several symbols:

If the symbol is...	It means...
	A generally hazardous condition not represented by other safety symbols.
	This product contains a Class II laser. Do not stare into the beam. (C029) Laser symbols are always accompanied by the classification of the laser as defined by the U. S. Department of Health and Human Services (for example, Class I, Class II, and so forth).
	A hazardous condition due to mechanical movement in or around the product.

If the symbol is...	It means...
	<p>This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)</p>

Sample caution notices follow:

Caution

The battery is a lithium ion battery. To avoid possible explosion, do not burn. Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM® has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C007)

Caution

The system contains circuit cards, assemblies, or both that contain lead solder. To avoid the release of lead (Pb) into the environment, do not burn. Discard the circuit card as instructed by local regulations. (C014)

Caution

When removing the Modular Refrigeration Unit (MRU), immediately remove any oil residue from the MRU support shelf, floor, and any other area to prevent injuries because of slips or falls. Do not use refrigerant lines or connectors to lift, move, or remove the MRU. Use handholds as instructed by service procedures. (C016)

Caution

Do not connect an IBM control unit directly to a public optical network. The customer must use an additional connectivity device between an IBM control unit optical adapter (that is, fibre, ESCON®, FICON®) and an external public network . Use a device such as a patch panel, a router, or a switch. You do not need an additional connectivity device for optical fibre connectivity that does not pass through a public network.

Environmental notices

The environmental notices that apply to this product are provided in the *Environmental Notices and User Guide, Z125-5823-xx* manual. A copy of this manual is located on the publications CD.

Send us your feedback

Your feedback is important in helping to provide the most accurate and high-quality information. If you have comments or suggestions for improving this publication, you can send us comments by e-mail to starpubs@us.ibm.com or use the Readers' Comments form at the back of this publication. Be sure to include the following information in your correspondence:

- Exact publication title
- Form number (for example, GA32-0689-xx), part number, or EC level (located on the back cover)
- Page numbers to which you are referring

Summary of changes

This topic lists terminology, maintenance, and editorial changes that were made to the *IBM System Storage TS3500 Tape Library with ALMS Tape System Reporter User's Guide*. Technical changes or additions to the text and illustrations are indicated by a vertical line (|) in the left margin of the page.

What's new in this edition

The following information has been added to this edition (GA32-0598-03):

- Support for the IBM System Storage TS1140 Tape Drive (Model 3592 E07)
- Support for additional operating systems (Windows Server 2003 and Windows Server 2008)
- Support for the latest DB2 Runtime Client

Previous edition

The following information was new or changed in the previous edition (GA32-0598-02):

- Clarification was added on how to configure Apache Derby so that you can use the features of the IBM Tape System Reporter application to the full.
- Clarification was added so that you can use the DB2 database with the IBM Tape System Reporter application.
- Clarification was added so that you can configure Java server to use IBM Tape System Reporter application.
- Added a new section (Installation scenarios) to further clarify the installation process when you install DB2 and the Tape System Reporter applications on the same server. Or, when you install one of the applications on the server and one on the client.

Chapter 1. IBM Tape System Reporter overview

The IBM Tape System Reporter application is a Windows-based graphical user interface (GUI) software application that allows you to monitor and gather data for multiple libraries. You can generate general and specific data reports for the multiple tape cartridges, tape drives, and frames that you are monitoring.

The IBM Tape System Reporter application enables operators and administrators of the TS3500 Tape Library to monitor and report on storage devices from any location in an enterprise environment. This application communicates directly with your library to collect and store pertinent data enabling you to generate and view performance trends. The IBM Tape System Reporter application is bundled with your Advanced Library Management System (ALMS) purchase.

Data is available from 3592 tape drives (models J1A and later) and LTO Ultrium tape drives (model Ultrium 2 and later).

The ccSARS data is available for the TS1120 (3592 E05), LTO Ultrium 4, and later tape drives.

Notes:

1. Data is not collected for the LTO Ultrium 1 Tape Drive.
2. Use of the IBM Tape System Reporter application requires that you establish database connectivity through firewalls and to any tape libraries that it is monitoring.

The IBM Tape System Reporter application operates by collecting information from the TS3500 Tape Library, aggregating the data in a database, and providing you the ability to generate a report. You can generate a General SQL Query or custom report on the utilization and performance of tape cartridges, tape drives, and the tape library. The application can be installed by you or by IBM Lab Services. Figure 1 on page 2 illustrates how the Tape System Reporter application collects information from the tape libraries, aggregates the data in a database, and provides you with the opportunity to generate a general query or custom report.

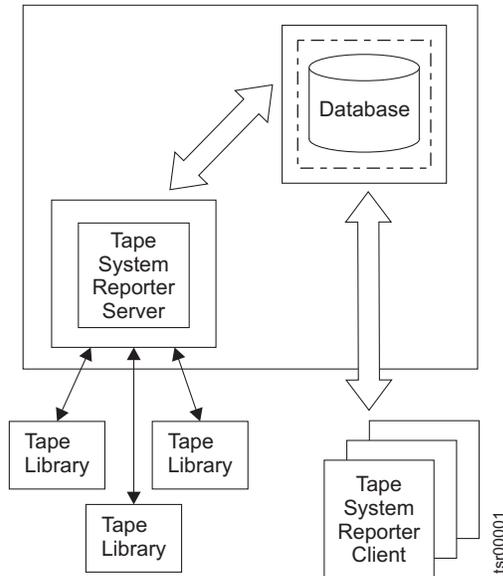


Figure 1. Tape System Reporter data flow

Note: It is suggested that you install the IBM Tape System Reporter application on a dedicated server machine that is separate from your client machine or machines. This is particularly effective when balancing workload is a consideration.

IBM Tape System Reporter reports

The following reports can be generated using the Reports menu selections from within the IBM Tape System Reporter application:

Monitor report

A monitor report is a report of the Library Performance and or Mount History events for a specific IP Address. It provides a text message record of the data collection process for these events. You must initiate at least one monitor report before you can request a General SQL Query or custom report.

General SQL Query reports

The General SQL Query reports provide details about the Library Performance or Mount History events associated with one or more IP addresses.

Custom Report

A custom report provides specific information about one Library Performance or Mount History event associated with the IP Address that you designate.

Special report features

The following special report features are available with any code level of the TS3500 Tape Library code.

Note: If you have the latest code level you can generate reports for Host Writes, Host Reads, Drive Residency, and efficiency.

Rollup report

This feature allows you to generate a roll up report in graph, table, or export csv format for the one of the following pieces of information including:

- Host Writes (in MBs) - Mount History (available with code version 8140 and above)
- Host Reads (in MBs) - Mount History (available with code version 8140 and above)
- Drive Residency (in minutes) - Mount History (available with code version 8140 and above)
- Write Retries Media (count) - Mount History
- Write Perms Media (count) - Mount History
- Read Retries Media (count) - Mount History
- Read Perms Media (count) - Mount History
- Mount Total (count) - Library Performance
- Ejects Total (count) - Library Performance
- Total Inputs (count) - Library Performance

The following are ccSars values. These values for which you can run reports are identified on the report drop-down list with an asterisk (*) next to the name. The asterisk and the fact that it is a ccSars value report does not display on the report that is generated.

- Mount Rating Drive
- Mount Rating Media
- Mount Rating Ports
- Mount Rating Port0
- Mount Rating Port1
- Mount Write Perf Util
- Mount Write ERPs Impct
- Mount Write Burst Util
- Mount Write Buffer Util
- Mount Read Perf Util
- Mount Read ERPs Impct
- Mount Read Burst Util
- Mount Read Buffer Util
- Mount Capacity Total Util
- Mount Capacity Writes Util
- Mount Capacity Control Util

Efficiency

This feature allows you to see how much a drive and or volser or a logical library writes per mount per minute. Efficiency is available on Host_Read and Host_Write for both Mount History and Library Performance. The efficiency fields are Per Mount and Per Second (while mounted).

IBM Tape System Reporter prerequisites

The IBM Tape System Reporter application enables operators and administrators of the TS3500 Tape Library to monitor and report trends and performance on storage devices from any location in an enterprise environment. The following information provides key considerations before you initiate the use of the IBM Tape System Reporter application.

Specific preinstallation concerns

Consider the following specific concerns as you prepare to install and use the IBM Tape System Reporter application:

Connectivity requirements

Use of the IBM Tape System Reporter application requires that you establish database connectivity through firewalls and to any tape libraries that it is monitoring.

System requirements

The IBM Tape System Reporter application is supported on a computer that contains the following:

- Windows[®] 2000, Windows XP, Windows Server 2003, or Windows Server 2008 operating system
- The DB2[®], Apache Derby (up through v10.7.1.1), or Oracle databases are supported. One of these three databases and its accompanying Run-Time Client is required.
 - Apache Derby and IBM Data Server Runtime Client
 - IBM DB2 Express-C and IBM Data Server Runtime Client
 - Oracle Database Express[®] Edition and Oracle Database Instant Client

You can download any of these applications from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680>

There are two versions of the Tape System Reporter server, a Windows version and a Java version. The newer Java version allows the server to be more easily run as a started task or Windows service. The IBM Data Server Runtime Client is only required if the Windows version of the server is used. The IBM Data Server Runtime Client is not needed if the Java version of the server is used.

- An activated and enabled ALMS license for the TS3500 Tape Library being monitored by the Tape System Reporter application.
- Java 1.4.1 or later on the server where the Apache Derby or DB2 database is installed. You can download the latest version of Java from <http://www.java.com>

The following table summarizes the system requirements

Table 1. Summary of system requirements to run the Tape System Reporter application

	Apache Derby	DB2	Oracle
Java Version	<ul style="list-style-type: none">• Apache Derby• Java 1.4.1 or higher	<ul style="list-style-type: none">• IBM DB2 Express-C• Java 1.4.1 or higher	<ul style="list-style-type: none">• Oracle Database Express Edition• Oracle Database Instant Client

Table 1. Summary of system requirements to run the Tape System Reporter application (continued)

	Apache Derby	DB2	Oracle
Windows Version	<ul style="list-style-type: none"> • Apache Derby • Java 1.4.1 or higher • IBM Data Server Runtime Client 	<ul style="list-style-type: none"> • IBM DB2 Express-C • Java 1.4.1 or higher • IBM Data Server Runtime Client 	<ul style="list-style-type: none"> • Oracle Database Express Edition • Oracle Database Instant Client

Apache Derby database

The Derby database is used to support the IBM Tape System Reporter application in the following ways:

- It contains the user IDs and passwords that are authorized to use the application.
- It stores all the data that is collected and aggregated by the application.

DB2 database

The DB2 database is used to support the IBM Tape System Reporter application in the following ways:

- It contains the user IDs and passwords that are authorized to use the application.
- It stores all the data that is collected and aggregated by the application.

Oracle usage

You can download the Oracle Instant Client Basic and Instant Client ODBC (if you do not already have them installed). Then, set up your system to use Oracle for the IBM Tape System Reporter application.

Configuring Apache Derby to use the IBM Tape System Reporter application

Complete this task to configure Apache Derby so that you can use the IBM Tape System Reporter application.

Before you begin

Ensure that you have completed the prerequisites so that you can acquire the full functions of the IBM Tape System Reporter application. The prerequisites consist of the following:

- IBM Data Server Runtime Client installed where it needs to be
- ALMS license for the TS3500 Tape Library activated and enabled
- Java 1.4.1 or later installed

About this task

The Derby database is an open source relational database implemented entirely in Java. This guide only supports Derby up through version 10.7.1.1. You can download Derby at http://db.apache.org/derby/derby_downloads.html

It is not the intent of this documentation to explain how to download and use Derby to establish a database that contains the authorizations for using the IBM Tape System Reporter application. The Derby Web site contains the documentation that you need for these functions. However, the following information is provided as a guide for setting up and using Derby so that you can use the IBM Tape System Reporter application.

Perform the following steps to install and configure Derby on the host that serves as the database server:

Note: The following steps are based on the use of Windows XP. The steps are slightly different if you are using a different version of Windows.

Procedure

1. Download the bin version 10.7.1.1 of Apache Derby.
2. Extract Apache Derby to the directory of your choice; something like `c:\derby_10`
3. Establish new environment variables.

Note: You can set these variables on the command line for a one time use or set them in the global profile. This scenario shows them being set in the global profile.

- a. Double-click the **My Computer** icon.
- b. Click the link.
- c. Double-click the **System** icon.
- d. Select the **Advanced** tab.
- e. Click **Environment variables**. The Environment Variables window is displayed.
- f. Click **New** in the System variables section. Input **DERBY_HOME** in the Variable name field. Input **C:\Derby_10** (or the directory you expanded the derby zip into) in the Variable value field. Then, click **OK**.
- g. Scroll down the Variable list in the System variables section and click **Path** to highlight it.
- h. Click **Edit**.
- i. Add **;%DERBY_HOME%\lib** (include the semicolon) to the end of the path string and click **OK**.
- j. Scroll down the Variable list (again) in the System variables section and click **ClassPath** to highlight it.
- k. Click **Edit**.
- l. Add **;%DERBY_HOME%\lib** (include the semicolon) to the end of the path string and click **OK**.
- m. Validate the variables you have added by performing the following step:
 - 1) Open a command prompt (Start->Run->cmd).
 - 2) Enter **echo %DERBY_HOME%**
The output displays the variable value that you entered (in this example `c:\derby_10`).
- n. Create a new file and save it as `derby.properties` in `%DERBY_HOME%`.

Note: If you create this file using Notepad, ensure that you save target as "All files." Otherwise, Windows appends the file name with a `.txt` extension.

o. Add the following to the %DERBY_HOME%/derby.properties file:

- derby.connection.require Authentication=true
- derby.authentication.provider=BUILTIN
- derby.user.tsruser1=tsrpass1
- derby.databasedefaultConnectionMode=fullAccess

Note: The user name and password in this scenario for the user of the Tape System Reporter application is: **tsruser1** and **tsrpass1**.

4. Edit the **startNetworkServer.bat** in %DERBY_HOME%\bin.

There are two lines that you must modify in this bat file. The first line modification begins under the **:runNoClasspath** and the second line modification begins under the **:runwithClasspath**.

:runNoClasspath

The line under this designation must look exactly like the following (the line must be continuous. The example shows line breaks but this is done to fit the format of this page):

```
:runNoClasspath
"%_JAVACMD%" %DERBY_OPTS% -classpath "%LOCALCLASSPATH%"
-Dderby.system.home=%DERBY_HOME%\tsrdb\
org.apache.derby.drda.NetworkServerControl start
-h <ipaddress> -p <port>
```

Note: You must insert your own IP address in the modified line and not use the one shown in the following modified line. To obtain your IP address, open to a command prompt and enter ipconfig. This displays your machine's IP address.

:runwithClasspath

The line under this designation must look exactly like the following (the line must be continuous. The example shows line breaks but that is done to fit the format of this page):

```
:runWithClasspath
"%_JAVACMD%" %DERBY_OPTS% -classpath "%CLASSPATH%;%LOCALCLASSPATH%"
-Dderby.system.home=%DERBY_HOME%\tsrdb\
org.apache.derby.drda.NetworkServerControl start
-h <ipaddress> -p <port>
```

Note: You must insert your own IP address in the modified line and not use the one shown in the following modified line. To obtain your IP address, open to a command prompt and enter ipconfig. This displays your machine's IP address.

5. Edit the **stopNetworkServer.bat** in %DERBY_HOME%\bin.

There are two lines that you must modify in this part of the existing script. The first line modification begins under the **:runNoClasspath** and the second line modification begins under the **:runwithClasspath**.)

:runNoClasspath

The line under this designation must look exactly like the following (the line must be continuous. The example shows line breaks but that is done to fit the format of this page):

```
:runNoClasspath
"%_JAVACMD%" %DERBY_OPTS% -classpath "%LOCALCLASSPATH%"
-Dderby.system.home=%DERBY_HOME%\tsrdb\
org.apache.derby.drda.NetworkServerControl shutdown
-h <ipaddress> -p <port>
```

Note: You must insert your own IP address in the modified line and not use the one shown in the following modified line. To obtain your IP address, open to a command prompt and enter `ipconfig`. This displays your machine's IP address.

:runwithClasspath

The line under this designation must look exactly like the following (the line must be continuous. The example shows line breaks but that is done to fit the format of this page):

```
:runWithClasspath
"%_JAVACMD%" %DERBY_OPTS% -classpath "%CLASSPATH%;%LOCALCLASSPATH%"
-Dderby.system.home=%DERBY_HOME%\tsrdb\
org.apache.derby.drda.NetworkServerControl shutdown
-h <ipaddress> -p <port>
```

Note: You must insert your own IP address in the modified line and not use the one shown in the following modified line. To obtain your IP address, open to a command prompt and enter `ipconfig`. This displays your machine's IP address.

6. Test the start and stop scripts at this point by double clicking on them. The start script should open a command window that accepts no input and the stop script should open a command window and then close both the start and stop windows.

If everything is working correctly go to the next step, otherwise double check everything.

7. Create the database.

Start the derby server by double clicking on `%DERBY_HOME%\bin\startNetworkServer.bat`, then, open an `ij` prompt by double clicking `%DERBY_HOME%\bin\ij.bat`.

Enter the following text to create the database (in this scenario, the database name is **tsrdb**):

```
connect 'jdbc:derby://<ipaddress>:1527/tsrdb;create=true;user=tsruser1;pass=tsrpass1;';
```

8. Check the `%DERBY_HOME%` directory. If you see a folder matching your database name, the Derby install and configuration process is complete. Also, close the connection and `ij` window. Enter `Exit`.

Configuring Oracle for IBM Tape System Reporter use

Complete this task to configure your Oracle application so that you can use the IBM Tape System Reporter application.

Before you begin

Ensure that your system matches the system requirements and that you have completed the prerequisites so that you can acquire the full functions of the IBM Tape System Reporter application. The prerequisites consist of the following:

- Windows 2000, Windows XP, Windows Server 2003, or Windows Server 2008 operating system
- Apache Derby, DB2, or Oracle database is activated and running
- ALMS license for the TS3500 Tape Library activated and enabled
- Java 1.4.1 or later installed

About this task

Perform the following steps to install and configure Oracle:

Procedure

1. Navigate to the Oracle Website and download the Oracle Instant Client Basic and Instant Client ODBC application if you do not already have these installed on your machine.
2. Unzip these features into your C:/Program Files/ directory.
3. Open your new directory and double-click the odbc_install.exe file.
4. Open your Windows Control panel.
5. Double-click the Administrative Tools icon.
6. Double-click the Data Sources (ODBC) icon. The ODBC Data Source Administrator window is displayed.
7. Click the system DSN tab and click the **Add** button. The Create New Data Source window is displayed.
8. Use the scroll down bar to find the **Oracle in instantclient xx.x** selection. Click this choice and then, click the **Finish** button. The Oracle ODBC Driver Configuration window is displayed.
9. Complete the input fields on this window with the following information.

Data Source Name

Input the name that the Tape System Reporter application references.

Description

Leave this field blank.

TNS Service Name

Input the address of the database. The format of this input is:
address:port/database name

An example input would look like: srs7.system.eug.com:1521/OP

User ID

Input the database login name.

All other input fields and radio buttons

Leave the defaults as they are displayed.

10. Click the **Test Connection** button. The Oracle Driver Connect window is displayed and it requires that you input the password that provides access to the database. Click **OK** to test the connection.
A message is returned indicating a successful connection. In addition the driver information is added to System DSN tab.
11. Close all the Windows Control Panel windows and open your Tape System Reporter application.
12. Click Database and then Setup on the Tape System Reporter window.
13. Input the Database Name associated with your Oracle set up to use Tape System Reporter. Also, click the radio button next to the Oracle selection in the Database Type box. Then, click the **Test** button. The system checks whether a connection to TSR can connect to the database. If a connection is made, a message box is displayed indicating that a successful connection was made.

14. Click the Table tab and designate the Table name and Date Format. Then, click the **Test** button. The Test Table window is displayed and it requires that you input the password that allows you to access the Tape System Reporter application.
15. Input the password and click **OK**. A message is returned that the test was successful. This indicates that the designated table name exists. You can proceed to use the instructions that allow you to use the Tape System Reporter application.

Configuring the Java server to use IBM Tape System Reporter

Complete this task to configure the Java server so that you can use the IBM Tape System Reporter application.

Before you begin

Ensure that your system matches the system requirements and that you have completed the prerequisites so that you can acquire the full functions of the IBM Tape System Reporter application. The prerequisites consist of the following:

- Windows 2000, Windows XP, Windows Server 2003, or Windows Server 2008 operating system
- Apache Derby, DB2, or Oracle database is activated and running
- ALMS license for the TS3500 Tape Library activated and enabled
- Java 1.4.1 or later installed

About this task

Perform the following steps to configure Java server so that you can use it with the IBM Tape System Reporter application:

Procedure

1. Create a folder where all of the Java Tape System Reporter server files are to be installed.
2. Go to the following Web site and download the Java TSR Server file to the directory that you created in step one: <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680>
3. Create 2 documents in the folder. Designate one with the name **hosts.properties** and designate the other document with the name **tsrserver.properties**.
4. Edit the **hosts.properties** file and add the library name or IP addresses that you want Java to connect to. If you have multiple libraries or IP addresses, you must designate a single IP address or library name to each line. For example:

```
lib1
1.2.3.4
lib2
```

In this example, the Java Tape System Reporter server connects to each library as designated.

5. Edit the **tsrserver.properties** file and add the following 5 lines of code. The code is different for each type of database (DB2, Oracle, or Derby) that you are using. Only one database can be active at a time.

The following example displays the lines of code that you must insert in the file to activate the use of a DB2 database.

```
databaseDriver = com.ibm.db2.jcc.DB2Driver
databaseUrl = jdbc:db2://1.2.3.4:50000/TSRDB
databaseUsername = tsruser1
databasePassword = tsrpass1
databaseTable = finalmini
```

The meaning of the coded lines is as follows:

databaseDriver

This is the name for the DB2 driver.

databaseUrl

This line contains jdbc:db2//<address of database>:<port>/<database name> for db2.

databaseUsername

This is the user name for the database.

databasePassword

This is the password for the database.

databaseTable

This is the table name that you want data inserted to.

Note: The information is different for each database but the explanation remains the same.

The following represents the code that you use for Oracle:

```
databaseDriver = oracle.jdbc.OracleDriver
databaseUrl = jdbc:oracle:thin:@//1.2.3.4:1521
databaseUsername = tsruser1
databasePassword = tsrpass1
databaseTable = finalmini
```

The following represents the code that you use for Derby:

```
databaseDriver = org.apache.derby.jdbc.ClientDriver
databaseUrl = jdbc:derby://1.2.3.4:1527/TSRDB
databaseUsername = tsruser1
databasePassword = tsrpass1
databaseTable = finalmini
```

6. Copy the designated driver jar file into the same directory where the JTsrServer.jar file is located.

When you are finished you must have the following matches within your directory

DB2 JTsrServer.jar and db2jcc.jar

Oracle JTsrServer.jar and ojdbc14.jar

Derby JTsrServer.jar and derbyclient.jar

7. Start javaTSR.

To start javaTSR you must have the JTsrServer.jar and the driver.jar files in the same directory.

- a. Open a command prompt.
- b. Navigate to the directory where the JTsrServer.jar file resides.
- c. Enter the following command.

Note: The example presumes that you are using Windows. In Windows, the command uses semicolons. If you are using UNIX, you would use a colon instead of a semicolon.

```
java -cp ".\JTsrServer.jar;.\<driver jar file>" JTsrServer
```

- d. Click **Enter** on your keyboard.

Installing and setting up the IBM Tape System Reporter application on the server

Complete this task to install the IBM Tape System Reporter application and perform a one time set up process on the server machine. The setup must be completed before you can use the application.

Before you begin

To install and use the IBM Tape System Reporter application on the server machine you must ensure that the following prerequisites are met:

- The server is equipped with the TS3500 Tape Library and you have activated your ALMS license and configured your server for its use.
- You have establish database connectivity through firewalls and to any tape libraries that the application is monitoring.
- The Derby or DB2 database is activated and contains the user ID and password that provide access to the IBM Tape System Reporter application.

Note: You can assign multiple user IDs and passwords or a single user ID and password depending on how you want to administer the IBM Tape System Reporter application.

- You have the user ID and password that allows you to access the IBM Tape System Reporter application.

Note: The application does not keep a record of this information for use after you log out or get disconnected. You might want to record the user ID and password in a safe place for future use.

- Ensure that the Derby or DB2 database is running.

About this task

When you have ensured that your system meets the prerequisite criteria, you initiate the download of the IBM Tape System Reporter application from the designated external Web site. During the installation process, you can create a short-cut that allows you to place an Icon for the application on your desktop.

After your initial set up on the server, the input is used as default values. This allows you to bypass setup and click **Connect** for subsequent log ins to the application.

When you open the application for the first time, you must do a one time set up for the network connection points.

Perform the following steps to install and set up the IBM Tape System Reporter application on the server.

Procedure

1. Open your browser and input <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680> to access the external Web site containing the IBM Tape System Reporter application.

Note: You do not need to download the latest TS3500 Tape Library code version to obtain the use of the IBM Tape System Reporter application.

However, the following features and information fields in the application are only available with version 8140 and above of the code:

- Host_Write for Mount History
- Host_Read for Mount History
- Efficiency feature for Host_Write and Host_Read
- Efficiency feature for the Mount History fields of Drive_Residency and Life_Mounts

2. Initiate the installation application. During this process you can request that a short-cut Icon be placed on your desk top.
3. Click the short-cut Icon on your desktop or navigate to the directory where the application is stored and double-click on the .exe file. The IBM Tape System Reporter window is displayed.
4. Select **Database**, then **Setup**. The Setup panel (containing a Database tab and a Table tab) is displayed.
5. Complete both tabs of the Setup panel with the following information.

Database tab section

Database Name

Enter the name that you used to during the DB2, Derby, or Oracle setup.

Note: The name cannot contain any special characters such as the pound sign, asterisk, and so on.

IP Address (Greyed out when you select Oracle as your database type)

Enter the IP address of the database server where the Derby or DB2 database is installed.

Note: Ensure that the machine has a static IP address, otherwise the setup process must be done for each time the IP address changes.

IP Port (Greyed out when you select Oracle as your database type)

Enter 1527 or the port number that matches the database.

Database Type

Click the radio button next to the database type that you are using. If you select Oracle, the IP Address and IP Port are greyed out.

Note: You can click the Test button after you complete the information on the Database tab. A verification window is displayed that requests the entry of the Derby or DB2 user ID and password that you set up for using the Tape System Reporter application. Provide this information and click **OK**. The system checks for a connection between the machine being used and the Derby or DB2 database.

Table tab

Table Name

Enter the name of a table that exists or that you want to create. The system collects the library performance and mount history activity information in the designated table. When the table is queried, it reports the performance that was queried and reported from the client.

Date Format

You can choose the date format for your customized and query reports by clicking the radio button next to the following choices:

US Displays the date format on the reports as: month, day, year

ISO Displays the date format on the reports as: year, month, day

EU Displays the date format on the reports as: day, month, year

6. Click the **Test** button to test if the table exists in the database. Click the **Create** button on the Table tab to create the table within the database.

Note: You might need to click the **Delete** button as part of the setup process if a table was initially set up and you had a change of mind.

Initiate one of the following actions:

Click the Test button on either tab

The database connection is verified when you click the test button on the Database tab.

The existence of the designated table is verified when you click the test button on the Table tab.

Click the Create button on the table tab

A settings box is displayed. You must supply the following information:

Username

Enter the user name that allows you to access the application. This is the user ID that has been created and stored within the Derby database.

Password

Enter the password that allows you to access the application. This is the password that has been created and stored within the Derby database.

Click the Delete button on the table tab

A confirmation message is displayed asking that you confirm that you want to delete the specified table.

Note: This button is not generally used during the initial setup process.

7. Complete the Settings box and click **OK**. The application registers the information that you have entered. The IBM Tape System Reporter application is displayed.
8. Select **Database** and then select **Connect**. The Database Connection settings window is displayed.
Supply the user name and password that is used to access the application and click **OK**. There is a slight delay as the system verifies your input. A successful connection returns a text box message indicating connection success.

Note: Only the initial log in requires the input of both the username and password. Subsequent uses of this function require only the input of the password.

9. Select **File** on the toolbar and then select **Start Monitoring**. The TS3500 Library box is displayed.

10. Enter an IP address or host name in the input field. You can also select **All** or one of the IP addresses or host names from the drop-down list. When you select **All**, all of the IP addresses or host names that have started gathering data are selected for monitoring.

Notes:

- a. When an IP address is entered, it is added to the drop-down list when it begins to gather data if it is not already part of the list.
 - b. You must specify at least one library to monitor to generate reports. If no libraries are specified, no reports can be generated.
 - c. No further action is necessary once the tape library is accessed. You might want to check the transaction windows from time to time to ensure that data gathering is still occurring.
 - d. Multiple tape libraries can be accessed for data gathering.
11. Provide the users of the client machine the Database and Table name.

Note: It might be good to record a list of all the table names that you create. You might want to use this list to determine which tables to delete or what tables can be created without duplication.

Installing and setting up the IBM Tape System Reporter application on the client

Complete this task to install the IBM Tape System Reporter application and perform a one time set up process on your client machine. The setup must be completed before you can use the application.

Before you begin

To install and use the IBM Tape System Reporter application on the client machine you must ensure the following:

- The client is equipped with the TS3500 Tape Library and your ALMS license is activated and configured for use.
- If you want to use the latest features of the IBM Tape System Reporter application, you must have version 8140 of the TS3500 Tape Library code. The following features are part of the latest TS3500 Tape Library code:
 - Host_Write for Mount History
 - Host_Read for Mount History
 - Efficiency feature for Host_Write and Host_Read
 - Efficiency feature for the Mount History fields of Drive_Residency and Life_Mounts
- You have established database connectivity through firewalls and to any tape libraries that the application is monitoring.
- The Derby or DB2 database is activated and contains the user ID and password that provide access to the IBM Tape System Reporter application.
- You have obtained a user ID and password from your system administrator that allows you to access the IBM Tape System Reporter application.
- Ensure that the Derby or DB2 database is running.

About this task

When you have ensured that your system meets the prerequisite criteria, you initiate the download of the IBM Tape System Reporter application from the designated external Web site. During the installation process, you can create a short-cut that allows you to place an Icon for the application on your desktop.

When you open the application for the first time, you must do a one-time setup for the network connection points.

After your initial setup on the client, the input is used as default values. This allows you to bypass setup and click **Connect** for subsequent log ins to the application.

Perform the following steps to install and set up the IBM Tape System Reporter application.

Procedure

1. Open your browser and input <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680> to access the external Web site containing the IBM Tape System Reporter application.

Note: You do not need to download the latest TS3500 Tape Library code version to obtain the use of the IBM Tape System Reporter application. However, the following features and information fields in the application are only available with version 8140 and above of the code:

- Host_Write for Library performance
- Host_Read for Library performance
- Efficiency feature for Host_Write and Host_Read
- Efficiency feature for the Mount History fields of Drive_Residency and Life_Mounts

2. Initiate the installation application. During this process you can request that a short-cut Icon be placed on your desk top.
3. Click the short-cut Icon on your desktop or navigate to the directory where the application is stored and double-click on the .exe file. The IBM Tape System Reporter window is displayed.
4. Select **Database** then **Setup**. The Setup panel (containing a Database tab and a Table tab) is displayed.
5. Complete both tabs of the Setup panel with the following information.

Database tab section

Database Name

Enter the name that the administrator set up on the server.

IP Address (Greyed out when you select Oracle as your database type)

Enter the IP address of the database server where the Derby or DB2 database is installed.

Note: Ensure that the machine has a static IP address, otherwise the setup process must be done for each time the IP address changes.

IP Port (Greyed out when you select Oracle as your database type)

Enter 1527 or any available and matching port number.

Database Type

Click the radio button next to the database type that you are using. If you select Oracle, the IP Address and IP Port are greyed out.

Note: You can click the Test button after you complete the information on the Database tab. A verification window is displayed that requests the entry of the Derby or DB2 user ID and password that you set up for using the Tape System Reporter application. Provide this information and click **OK**. The system checks for a connection between the machine being used and the Derby or DB2 database.

Table tab**Table Name**

Enter the name of the table that the administrator set up on the server.

Date Format

You can choose the date format for your customized and query reports by clicking the radio button next to the following choices:

US Displays the date format on the reports as: month, day, year

ISO Displays the date format on the reports as: year, month, day

EU Displays the date format on the reports as: day, month, year

6. Click the **Test** button to test if the table exists in the database. A check is also made to ensure that the table exists.

Note: You can also click the **Create** button on the Table tab because it is activated. However, no good purpose is served trying to create a table on the client machine.

One of the following actions occurs:

Click the Test button on either tab

The database connection is verified when you click the test button on the Database tab.

The existence of the designated table is verified when you click the test button on the Table tab.

Do not click the Create button on the table tab

While this function is active no functional purpose is served by trying to create a table on the client machine. Tables must be created on the server machine.

Do not click the Delete button on the table tab

If you do click the Delete button, a confirmation message is displayed asking that you confirm that you want to delete the specified table. You would not want to do this without instructions from the system administrator.

7. Complete the Settings box and click **OK**. The application registers the information that you have input. However, this does not start the application. You must connect to the database by using the **Database** and **Connect** selection.

Introducing the menu bar

This topic introduces you to the functions provided by the IBM Tape System Reporter application and menu selections that you use to initiate those functions.

The menu bar consists of the following choices (left to right):

File This selection displays a drop-down menu list. The primary selection on the list is **Start Monitoring**. The **Start Monitoring** selection initiates a display window (monitor report) that allows you to select the libraries that you want to monitor. When a library is selected, a monitor window is displayed that reports Library Performance activity and or Mount History activity.

You can initiate a display for each library or host name. Or, you can initiate displays for all of the libraries and host names that you have added to the monitor drop-down list.

There is also a selection for **Import**. Import allows you to import a .csv file from your hard drive into the Tape System Reporter database. This function is primarily used by a person with administrator authority and provides a way to do comparative analysis among other things.

View This selection displays a menu list that has two choices that are defaulted to having the Status bar and the Tool bar activated. The Status bar is the line of text at the bottom of the IBM Tape System Reporter window. The Tool bar is the line directly below the Menu bar.

Note: You can choose to deactivate these view bars but it is not recommended that you do so.

Database

This menu selection displays a menu list that has the following three choices:

Setup Select this choice when you initially prepare the IBM Tape System Reporter application for use. You enter the settings for your host connection for the database and the table that is used to gather the performance information.

There might be occasions when the table name is changed and when this happens, you must make the change within **Setup**.

Connect

Select this choice the first time that you use the application and anytime when you must connect to the database. This choice requires the entry of the user ID and the password that allows you to access the database.

Disconnect

Select this choice to disconnect from the database.

Reports

This menu selection allows you to choose which type of report you want to generate (General SQL Query or Custom).

Resources

This menu selection allows you to delete drive or cartridge data that is stored in the data information database.

Window

This menu selection functions in the same manner as it does with other Windows applications.

Help

This menu selection allows you to see the version of the IBM Tape System Reporter application or the topics of the Help system.

Connecting to the database

Complete this task to establish a connection from the server where the IBM Tape System Reporter application is installed to the Derby, DB2, or Oracle database.

Before you begin

To use the IBM Tape System Reporter application you must ensure the following:

- You have contacted your system administrator and obtained the user ID and password that allows you to connect to the Derby, DB2, or Oracle database and the server where the IBM Tape System Reporter application has been installed. Your system administrator has created the user IDs and passwords and stored them in the applicable database.
- You have completed the initial set-up steps.

About this task

After you have initially set up the server and client, you must take the extra step of connecting to the network. Click **Connect** under the Database tool bar selection. The Database connection settings window is displayed requesting that you supply the userID and password that allows the Tape System Reporter application to access the correct database.

Note: The information in the setup is stored in the registry. All application restarts and upgrades open automatically to the Database connection settings window.

Perform the following steps to establish the connection.

Procedure

1. Select **Database**, then **Connect**. The Database Connection panel is displayed.

Note: This step is only needed the first time that you access the application or when you change the setup information. The setup information is stored in the registry which allows the application to go directly to the Database connection settings window.

2. Provide the following entries to gain access to the application

User ID

Enter the user ID that allows access into the application.

Password

Enter the password that allows access into the application.

3. Click **OK** to establish the connection.

A confirmation message is displayed for a successful connection.

Creating and deleting tables

Complete this task to create new tables or delete existing tables. It is recommended that this task be done on the server by a system administrator or someone who has access to the server.

Before you begin

To use the IBM Tape System Reporter application on the server, ensure that the following conditions exist:

- The database is connected.
- The Derby database is running.

About this task

The server can gather information from multiple Libraries (IP Addresses) but can only record those results to one table at a time.

The system administrator can create a new table and designate that it be used to gather information. The old table does not need to be deleted and it can still be used by the client. However, it does not contain the up-to-date- information. If the old table is deleted, all the data associated with the table is also deleted.

Note: When you create a new table name or delete a table name, you must inform the users of the client machine.

The system administrator must disconnect the Tape System Reporter application from the database connection before deleting a table and or creating a new table for information gathering.

Perform the following steps to create and delete a table on the server. It is presumed that you are connected to the network.

Procedure

1. Open the IBM Tape System Reporter application and select **Database** then **Disconnect**.
A confirmation message is displayed asking that you confirm that you want to disconnect.
2. Select **Database** then **Setup**. The Setup panel (containing a Database tab and a Table tab) is displayed.
3. Click the Table tab. Type the table name that you want to delete and click the **Delete** button.
A confirmation message is displayed asking that you confirm that you want to delete the designated table.
Remember that you do not need to delete a table in order to create a new table and designate it as the information gather.
4. Enter the new table name in the **Table Name** field.
5. Click the radio button next to the date format that you want appear on the customized and query reports. Your date format is displayed as follows:
 - **US** displays the date format as: month, day, year
 - **ISO** displays the date format as: year, month, day
 - **EU** displays the date format as: day, month, year

6. Click the **Create** button on the Table tab.

A settings box is displayed. You must complete the following information:

Username

Enter the user name that allows you to access the application. This is the user ID that has been created and stored within the Derby database.

Password

Enter the password that allows you to access the application. This is the password that has been created and stored within the Derby database.

7. Complete the Settings box and click **OK**. The application registers the information that you have entered.
8. Click **Connect** on the Database tab. The Database connection window is displayed. Enter the user ID and or password and click **OK**. A confirmation text message is displayed when the connection is successful.
9. Inform your users of the table status and which table is now gathering the current performance information.

Resources - deleting data in the database

The IBM Tape System Reporter application provides a method for you to start the data collection process with a new set of values. This is particularly helpful when you replace a drive or a cartridge. The method of deleting data is presented under the tool bar heading of **Resources**.

When you replace a drive or cartridge, the IBM Tape System Reporter application does not automatically adjust for the replacement. You must delete the data in the database for the item that you replaced. You can do this by accessing the Data Removal Options window and designating the drive or volser that you want to delete. When the information is deleted it gone forever with no way to recover it.

When you make a deletion request, the application provides a confirmation prompt.

Chapter 2. The IBM Tape System Reporter reports

There are three types of reports that you can generate within the IBM Tape System Reporter application: monitor, general query, and custom.

The monitor report is the first report that you must initiate. Without at least one monitor report it is not possible to generate the more detailed general query and custom reports. After you connect to the database, you must start the monitor report or reports for the IP Addresses associated with your Logical Libraries.

After the monitor reports are initiated, you can request a General SQL Query report that consists of either the Library Performance or the Mount History record for a single or multiple IP Addresses. Or, you can request a custom report that provides details about a single IP Address and an associated library performance or mount history activity.

There is one additional source from which you can create a general SQL Query or custom report and that is from an imported .csv file. Perhaps you are doing some analytical work and you want to compare statistics from a few months ago to the current numbers. You can import a .csv file that you might have exported a few months ago. The .csv file is saved to your database under the name that you assign and it is available for your use in generating reports.

You can initiate the following reports:

Monitor report

A monitor report is a report of the Library Performance and or Mount History events for a specific IP Address. It provides a text message record of the data collection process for these events. You must initiate at least one monitor report before you can request a General SQL Query or custom report.

A monitor report is initiated by clicking **File** on the menu bar followed by clicking **Start monitoring** on the menu list. The TS3500 Tape Library window is displayed. The input field on this window allows you to input the IP Address that you want to monitor.

General SQL Query reports

The General SQL Query reports provide details about the Library Performance or Mount History events associated with one or more IP addresses.

A General SQL Query report is initiated by clicking **Reports** on the menu bar followed by clicking **General SQL Query** on the drop-down list. The General SQL window is displayed. You can use the filters within this window to generate reports that provide general or focused Library Performance or Mount History statistics for one or more IP Addresses.

Custom Report

A custom report provides specific information about one Library Performance or Mount History event associated with the IP Address that you designate.

A custom report is initiated by clicking **Reports** on the menu bar followed by clicking **Custom** on the drop-down list. The Custom Reports window is displayed.

You can select report filters within the Custom Reports window that help you focus on what you want to see. You can also choose a format (bar graph, line graph, table view, or last instance) to view the results of your parameter choices. Or, you can choose to generate a .csv file and transfer the query results to your hard drive.

Monitor report

Initiating a monitor report begins the data collection process. You can collect mount history information and library performance information.

Data is available from 3592 tape drives (models J1A and later) and LTO Ultrium tape drives (model Ultrium 2 and later).

The ccSARS data is available for the TS1120 (3592 E05), LTO Ultrium 4, and later tape drives.

Notes:

1. Data is not collected for the LTO Ultrium 1 Tape Drive.
2. Use of the IBM Tape System Reporter application requires that you establish database connectivity through firewalls and to any tape libraries that it is monitoring.

You must initiate a monitor report before you can generate a General SQL Query or Custom report. You can select to monitor all the IP Addresses associated with your database or just a single IP Address.

A monitor report is initiated by clicking **File** on the menu bar followed by clicking **Start monitoring** on the menu list. The TS3500 Tape Library window is displayed. The entry field on this window allows you to enter the IP Address or named library that you want to monitor.

The IP Addresses and named libraries that you enter are accumulated and added to the drop-down list when data is initially gathered. If you designate an IP address or library that has no data, the item is not added to the list. ****ALL**** is not active until you enter at least one IP Address or named library and data has been gathered.

The IP Address or named library that you enter can generate a report that includes Library Performance and Mount History indicators or just Mount History indicators. Newer hardware (enhanced node card) contains the ability to report both events while older hardware (standard node card) reports only Mount History events.

The messages on the report provide a text message that indicates event details have been added to the database. A typical message on the report might read:

```
Getting Library Performance file from 9.11.xxx.xxx on
Sun Jun 22 2008 at 10:35:31 AM
Inserted 2 new entries from Library Performance file into database
Getting Mount History file from 9.11.xxx.xxx on
Sun Jun 22 2008 at 10:44:51 AM
Inserted 0 new entries from Mount History file into database
```

Using the report

You can use this report to report any irregularities or problems that you might see in the test messages that are provided. You can do this by choosing to print the report and sending a fax after it is printed out. Or, you can save the report as a text or word document, provide edit comments, and send it to your support person.

General SQL Query report

The General SQL Query report is true to its name in that it provides a report that allows you to see the library performance and or mount history performance of a specified IP address or named library.

Library performance statistics can help you determine the efficiency of your logical library partitions, particularly if some logical libraries are used more heavily than others. Information from the statistics can help you decide if you should re-partition your library to increase performance.

Mount History statistics provide information about tape cartridges that have been mounted and demounted from a drive. The Mount History report allows you to see a snapshot of what the library and tape drives are doing and how they are performing. You can use this information to help identify problems.

Library Performance

The IBM Tape System Reporter application allows you to designate the scope of this report by the use of the following filters:

IP Address

This filter allows you to designate the specific libraries to generate a report for. You must ensure that you use a single quote before and after the designated IP Address. Or, you can leave this field blank and click the **Generate** button to get a report that includes all libraries that are in the database. Your file selection (Library Performance or Mount History) determines the type of all inclusive report that is generated.

Date This filter allows you to designate the date (a single day within a month or a range of dates either before or after a designated date) for which you want to see performance statistics.

Time This filter allows you to designate the time frame to match the date filter. For instance, you can designate that the report provide the performance statistics for a specific time or for the time frame before or after the time frame that you designate.

Example: You use the filter and designate that you want to see all the performance statistics before and equal to 7:30:45AM on the dates that you have specified.

Logical Library

This filter allows you to designate the logical library or libraries associated with the IP Address. You must ensure that you use a single quote before and after the designated Logical Library.

After you have established your filters, you initiate the report generation. The Library Performance report provides the following information:

IP Address

Specifies the IP Address for which you initiated a query. A line of performance information is provided for each instance represented by your filter information.

Date Specifies the date that the tape cartridge was mounted into the drive in accordance with the filter parameters.

Time Specifies the time that the tape cartridge was mounted into the drive in accordance with the filter parameters.

Logical_Library

Specifies the logical library being reported on based on the filter parameters that you designated.

Residency_Max

Specifies the maximum amount of time, in seconds, that a tape cartridge was mounted on a drive during the last hour.

Residency_Avg

Specifies the average amount of time, in seconds, that a tape cartridge was mounted on a drive during the last hour.

Mounts_Total

Specifies the total number of mounts during the last hour.

Mounts_Max

Specifies the maximum amount of time, in seconds, required to perform any single mount operation during the last hour.

Mounts_Avg

Specifies the average amount of time, in seconds, required to perform any single mount operation during the last hour.

Ejects_Total

Specifies the total number of times that a tape cartridge was moved from the I/O station for this logical library.

Ejects_Max

Specifies the maximum amount of time, in seconds, required to perform any single eject operation during the last hour.

Ejects_Avg

Specifies the average amount of time, in seconds, required to perform any single eject operation during the last hour.

Inserts_Total

Specifies the total number of insert stores during the last hour. This number is the number of cartridges moved from an I/O station into the storage slots.

Mount History

The IBM Tape System Reporter application allows you to designate the scope of this report by the use of the following additional filters:

Volser This filter allows you to designate a specific group of volume serial numbers or just one volume serial number to query and report.

Frame This filter allows you to designate a location where the tape cartridges reside and query just the cartridges that reside there.

Drive This filter allows you to designate a specific drive location associated with the tape cartridge and to report on just that location.

Logical Library

Specifies the name of the logical library to which the cartridge has been assigned at the time of the query.

Element Address

This filter allows you to designate the virtual address that you want to query and report on for the status.

After you have established your filters, you initiate the report generation. The Mount History report provides the following information:

IP Address

Specifies the IP Address for which you initiated a query. A line of performance information is provided for each instance represented by your filter information.

Date Specifies the date that the tape cartridge was mounted into the drive in accordance with the filter parameters.

Time Specifies the time that the tape cartridge was mounted into the drive in accordance with the filter parameters.

Volser Specifies each volume serial number of the tape cartridges that you have queried.

Frame Specifies the specific frame and location of the tape cartridge you have queried.

Drive Specifies the specific drive of the tape cartridge that you have queried.

Logical Library

Specifies the name of the logical library to which the cartridge has been assigned at the time of the query.

Element Address

Specifies the virtual address of the tape cartridge that you have queried. The element address is a value that defines the cartridge's logical location in the library to the SCSI interface.

Mount_Host_Write (TS3500 Library Code version 8140 and above)

Specifies the number of megabytes written during the mount host write operations.

Mount_Host_Read (TS3500 Library Code version 8140 and above)

Specifies the number of megabytes read during the mount host read operations.

Mount_Drive_Residency (TS3500 Library Code version 8140 and above)

Specifies how many minutes the tape cartridge has been in the drive.

Mount_TapeAlert_media

Specifies the code number of the most recent TapeAlert flag that was received by this drive and which pertained to this cartridge.

Life_Mounts_Media

Specifies the number of times that the cartridge has been mounted to a drive since it was manufactured.

Note: When this number reaches and begins to exceed 20 000, the cartridge is a candidate for replacement.

Life_Write_Retries_Media

Specifies the number of errors, during the life of the tape cartridge, that have occurred when drives retried Write operations.

Life_Write_Perms_Media

Specifies the number of permanent, unrecoverable errors that have occurred during the life of the tape cartridge when drives performed Write operations.

Life_Read_Retries_Media

Specifies the number of errors that have occurred during the life of the tape cartridge when drives retried Read operations.

Life_Read_Perms_Media

Specifies the number of permanent, unrecoverable errors that have occurred during the life of the tape cartridge when drives performed Read operations.

Mount_Rating_Drive

Specifies the overall measure of the drive's condition. X'00' is unknown. The value ranges from X'01' (best) to X'FF' (worst). This is a rating of the drive's efficiency.

Note: According to the tape drive SCSI specifications, the quality summary efficiency parameters are designed to be used in trending analysis. An average 'good' quality value is X'40' while a steady value above X'80' indicates a degraded condition.

Mount_Rating_Media

Specifies the overall measure of the condition of the cartridge that is currently mounted. X'00' is unknown. The value ranges from X'01' (best) to X'FF' (worst). This is a rating of the cartridge's efficiency.

Note: According to the tape drive SCSI specifications, the quality summary efficiency parameters are designed to be used in trending analysis. An average 'good' quality value is X'40' while a steady value above X'80' indicates a degraded condition.

Mount_Rating_Ports

Specifies the overall measure of the condition of the interface to the host server. X'00' is unknown. The value ranges from X'01' (best) to X'FF' (worst). This is a rating of the interface's efficiency.

Mount_Rating_Port0

Specifies the The overall measure of the condition of the Port 0 interface to the host server. X'00' is unknown. The value ranges from X'01' (best) to X'FF' (worst). This is a rating of the efficiency of the Port 0 interface.

Mount_Rating_Port1

Specifies the The overall measure of the condition of the Port 1 interface to the host server. X'00' is unknown. The value ranges from X'01' (best) to X'FF' (worst). This is a rating of the efficiency of the Port 1 interface.

Mount_Write_Perf_Util

Specifies the ratio of performance Write commands with respect to all Write-type commands. This is a measure of the efficiency of write performance. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Write_ERPs_Impct

Specifies the measure of how the data rate performance impacts the

error-recovery procedures (ERPs) on Write operations. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Write_Burst_Util

Specifies the measure of the comparison between the window tape buffer rate to the average rate. The window rate is the amount of data moved divided by the time when ready in the mode (when data could be moved, but is not). The average rate is the amount of data moved divided by the overall time in the mode (including setup, overhead, and so forth). The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Write_Buffer_Util

Specifies the average tape-buffer efficiency on Write operations. This is streaming write efficiency. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Read_Perf_Util

Specifies the ratio of performance Read-type commands with respect to all Read-type commands. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Read_ERPs_Impct

Specifies the measure of how the data rate performance impacts the error-recovery procedures (ERPs) on Read operations. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Read_Burst_Util

Specifies the measure of the comparison between the window tape buffer rate to the average rate. The window rate is the amount of data moved divided by the time when ready in the mode (when data could be moved, but is not). The average rate is the amount of data moved divided by the overall time in the mode (including setup, overhead, and so forth). The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Read_Buffer_Util

Specifies the average tape-buffer efficiency on Read operations. This is streaming read efficiency. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Capacity_Total_Util

Specifies the measure of the efficiency of static capacity. This value represents the percentage of recorded media that fits into the currently recorded area. It is compared to how much data can ideally fit in that area. The lower the percentage, the less capacity is available (due to recording error recovery, media defects, and so forth.)

Mount_Capacity_Writes_Util

Specifies the measure of the efficiency of active capacity on Write commands. This can be viewed as the sum of efficiency for Write operations on this mount. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Capacity_Control_Util

Specifies the measure of the efficiency of active capacity on all other operations. The value is given as a percentage. A high percentage is best; a low percentage is worst.

Mount_Crypto_Status

Specifies if a cartridge is encrypted. Values are 1 (the media contains

encrypted data), 0 (the media does not contain encrypted data), or a blank space if the drive was unable to determine whether the media contains encrypted data

Mount_Crypto_Rekey

Specifies if a cartridge has been rekeyed. Values are 1 (the cartridge was rekeyed during the last mount) or 0 (the cartridge was not rekeyed during the last mount).

Custom report

The Custom report is a report that is generated based on Library Performance or the mount history performance elements of a specified IP Address.

You can select report filters that help you focus on what you want to see. Some of the filters allow you to generate a roll up report. The roll up report can display efficiency information for all logical libraries or all drives or volser designations. The report can also display just the total count or change in the range that was specified which is not considered an efficiency check.

You can also choose a format for the report (bar graph, line graph, table view, or last instance) to view the results of your parameter choices. Or, you can choose to generate a .csv file and transfer the query results to your hard drive.

To generate a report you must ensure that you are monitoring an IP Address otherwise no data is collected and no report can be generated.

To generate a report, you must provide the following information and click **Generate**:

Templates

(Optional) You can make a new template by choosing the report parameters, adding a name in the field next to the **Save** button, and clicking **Save**.

You can select a template name from the drop-down list next to the **Load** button and click **Load**. The parameters associated with the template are automatically supplied to the required entry fields.

When the template is saved, you cannot change it unless you delete it and create a new template. The significance of having a template is that when it is loaded, it activates all the required entry fields. You can enter new values in the entry fields but they do not become part of the template.

Range (Required) Click the Range drop-down list and select one of the following choices:

- Last Day
- Last Week
- Last Month
- Last 2 Months
- Last 6 Months

Library

(Required) Select one of the IP addresses that you have been monitoring.

Note: After making this selection, there might be a slight delay (indicated by a hour-glass symbol) while the system accesses the IP.

Filter Fields

(Required) Click the Select data type drop-down list and highlight one of the Library Performance or Mount History elements.

Notes:

1. To have the list include the Library Performance data, you must ensure that you are monitoring an IP Address that reports Library Performance.
2. When you make the following selections, the **Rate** entry field is displayed:
 - Mount History: Host_Write (Library)
 - Mount History: Host_Read (Library)
 - Mount History: Host_Write (Drive/Volser)
 - Mount History: Host_Read (Drive/Volser)

If you select a Library Performance data type, the Logical Library entry field is activated.

If you select a Mount History data type, the Drive/Volser entry field is activated.

Logical Library

(Required) This field selection is available when you select a Library Performance field element. Highlight the **All** designation which provides a summary of all the libraries or select the libraries you want a report for.

Drive and or Volser

(Required) This field selection is available when you select a Mount History element even if your library is reporting Library Performance as well. Click the Select the drive or volser and highlight as many of the drive or volser designations that you want a report for.

Note: You can make an efficiency selection if you select Mount History: Host_Write or Mount History Host_Read.

Rate (Optional) Specifies the type of rate roll up report that you want. You can choose one of the following rate elements:

- **Per second (while mounted)** - Make this selection if you want to see what the throughput of your drives and or tapes is. The value displayed is that which is only measured while the cartridge is mounted. The units for this value are represented as meagabits per second (Mbps).
- **Per mount** - Make this selection when you want to see how much the drive or cartridge wrote or read per mount. If you selected multiple drives and or volsers this value shows on average how much was written or read

Report Type

(Required) Click the radio button next to one of the following report types:

- **Report last instance**

Note: This selection reports on just one instance. A message box is displayed that contains the details designated by your parameter selection. This selection is greyed out when you designate more than one logical library or more than one drive and or volser.

- **Report trend or Roll up in Line graph.** A line graph report is displayed with the dates and time designations as specified by the parameters that you selected.
- **Report trend or Roll up in Bar graph.** A bar graph report is displayed with the dates and time designations as specified by the parameters that you selected.
- **Report trend or Roll up in Table view.** A table view report allows you to see the exact same data as the graphs but in a format like what is displayed in the general sql query window.
- **Export to csv file.** This selection specifies that you want to transfer the collected data to your hard drive in the form of a .CSV file. When you make this selection and click the **Generate** button, the Export data from custom reports window is displayed. Use the following steps to transfer the information in a .csv file format:

You click the **Generate** button to initiate report creation.

Note:

When you select Mount History: TAPEALERT_MEDIA and click **Generate**, the TapeAlert Selection window is displayed. This window allows you to designate ten specific tape alerts. There are ten pull-down list fields and each pull-down contains the numbered tape alerts that are currently supported within the TS3500 Tape Library. The report displays the number of times a specified alert was generated during the time range you are querying. The report does not specify which drive or volser received the alert.

After you make at least one tape alert selection, click the **Submit** button to initiate the report.

After a report is generated, it is possible to capture the report as a bitmap and save it to your hard drive.

Chapter 3. Installation scenarios

The topics in this section provide a step by step installation and configuration template for DB2 and Tape System Reporter.

The following installs and configurations are covered in this section:

- DB2 and the Tape System Reporter application on the same server
- DB2 on a server and the Tape System Reporter application on a client such as a desktop that uses Windows XP.

Installation of the DB2 and Tape System Reporter applications on the same server

The tasks within this section describe how to install DB2 and Tape System Reporter applications on your server.

Both DB2 and the Tape System Reporter applications can optionally be installed on the same server. To complete this installation you need the following files:

- DB2 Express-C installation file
- Tape System Reporter Version 1.1 (or later) installation file

The latest version of these files can be downloaded from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680>.

The DB2 Express-C installation file is downloaded as a zip file. You must extract the files from the zip file into a directory. After the files are extracted, you process the setup file and perform the configuration tasks described in the following topics.

The final process is the installation of the Tape System Reporter application.

Installing and setup of DB2 on a server

Complete this task to install and setup up DB2 initially on your server.

About this task

Perform the following steps to install the DB2 database on the server

Procedure

1. Download the DB2 Express-C installation file to a directory. This download is in the form of a zip file.
2. Download the Tape System Reporter V1.1 (or later) installation program..

Note: Both the DB2 Express-C and the current version of Tape System Reporter can be downloaded from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680>.

3. Extract the files from the DB2 Express-C zip into your directory.
4. Double-click the **setup.exe** file. The **DB2 Setup Launchpad Welcome** window is displayed.

5. Click **Install a Product** and then, click the **Install New** button. The DB2 Setup Wizard screen is displayed.
6. Click **Next**. The **Software License Agreement** window is displayed.
7. Acknowledge the acceptance of the agreement (click the radio button) and click **Next** to continue. The **Select the installation type** window is displayed.
8. Select the **Custom** (click the radio button) installation type and click **Next** to continue. The **Select the installation, response file creation, or both** window is displayed.
9. Select **Install DB2 Express-C on this computer** and click **Next**. The **Select the features to install** window is displayed.
10. Accept the defaults including the directory path for the installation and click **Next**. The **Select the languages to install** window is displayed.

Note: If you have another version of DB2 already installed, you might be prompted to install the software in (C:\Program Files\IBM\SQLLIB01).

11. Accept the default of English and click **Next**. The **Set the DB2 copy name** window is displayed.
12. Accept the default (**DB2COPY1**) and click **Next**.
The **Specify the location of the DB2 Information Center** window is displayed.

Notes:

- a. If you have a prior copy of DB2 installed, you might be given another option. Ensure that this version of DB2 is the default DB2 on the computer.
- b. The option mentioned in this step is the option to select if you have access to the Internet from the server that you are using.
13. Select the **On the IBM Web site** option for the location that is used to access the DB2 Information Center. And then, click **Next**.
The **Set user information for the DB2 Administration server** window is displayed.
14. Select the **Local user or Domain user account** and then, fill in the associated input fields as noted.
 - a. **Domain** - leave this field as: **None - use local user account**.
 - b. **User name** - input a name that you want to use for the local account (for example, db2admin).
 - c. **Password** - input a name and number combination that you want to use as a password and that complies with password rules at your location.
 - d. **Confirm password** - input the eight-character name and number password that you designated for your password.
 - e. Leave the checkbox (**Use the same account for the remaining DB2 services**) checked.

Note: Ensure that you record your user name and password and set them aside for use during the installation of the DB2 and Tape System Reporter applications.

15. Click **Next** after ensuring that the input fields on the **Set user information for the DB2 Administration server** window are correct. The **Configure DB2 instances** window is displayed.
16. Configure the DB2 instances associated with this installation process.

- a. Click on each instance displayed in the information box next to the **Configure** button.
- b. Click the **Configure** button after highlighting the DB2 instances.
The **DB2 instance configuration** tabbed window is displayed in a separate window on top of the **Configure DB2 instances** window.

Notes:

- 1) Generally there is only one instance displayed in the information box.
 - 2) You must configure the DB2 instances before proceeding with your processing.
 - 3) Record the instance names for use later in the installation processing.
 - 4) Record the **service name** and **port name** displayed on the **DB2 instance configuration** tabbed window.
 - 5) Click **OK** to accept the values displayed on the tabbed window. The instances are configured and the **Configure DB2 instances** window is displayed.
17. Click **Next** on the **Configure DB2 instances** window to continue processing. The **Prepare the DB2 tools catalog** window is displayed.
 18. Ignore this window and click **Next** to continue. The **Set up notifications** window is displayed.
 19. Input the DB2 notifications setting in accordance with your site installation standards and click **Next** to continue. The **Enable operating system security for DB2 objects** window is displayed.
 20. Uncheck the check box and click **Next** to continue. The **Start copying files** window is displayed.
 21. Verify that the information is correct and click the **Install** button. The confirmation **Setup is complete** window is displayed.
 22. Click the **Finish** button to complete the installation. An informational window **First steps for ...** is displayed. Close this window.

Note: As part of the installation a green disk icon is placed on your desktop. This icon represents the DB2 Control Center.

What to do next

You must now do some additional configuration which is facilitated through the DB2 Control Center

Customizing the DB2 configuration

Complete this task to customize the DB2 configuration so that you can use it on the same server with the Tape System Reporter application.

About this task

You must customize DB2 to register your database and have it accessible when using the Tape System Reporter application. This is a 3-part task that involves creating the following within DB2:

1. Create the database name.
2. Create the alias database name.

3. Create the Open Database Connectivity (ODBC) for the database.

Perform the following steps to customize DB2 so that it operates with the Tape System Reporter application on the same server.

Procedure

1. Check your desktop tray for a **green** disk icon. This icon represents the DB2 Control Center.
2. Right click the icon and select **DB2 Control Center**. The **Control Center View** pop-up window is displayed.
3. Click **OK** to accept the defaults, close the pop-up window, and begin to use the DB2 Control Center.
4. Click the **plus sign (+)** next to **All Systems** to expand the menu selections. Continue clicking the plus signs for each item until you have clicked the plus sign next to the Databases selection. There is one database (SAMPLE) displayed.

Note: If the SAMPLE database is not displayed, something went wrong in the installation process. Uninstall the application and redo the installation.

5. Click **Create new database** in the lower right hand panel of the Control Center window. The **Specify a name for your new database** window is displayed.
6. Complete the following input fields:
 - a. Input a name in the **Database name** field. This name can be anything you choose, but it is recommended that it is something easy to remember. An example name is: TSRDB.
Ensure that you record this name for use later.
 - b. Input a path location in the **Default path** field. An example path is: C:/
 - c. Input a text description identifying your database name **Comment** field. For example, you might use **TSR database** as the comment which provides the full name for TSRDB in this example.
7. Click the **Next** button. The **Specify where to store your data** window is displayed.
8. Do not change what is displayed on this window and click the **Next** button. The **Select your maintenance strategy** window is displayed.
9. Click the radio button next to **NO**. You do not want to choose a maintenance schedule. Then, click the **Next** button. The **Provide a valid SMPT server** window is displayed.
10. Click the **Next** button. There is no input for this window. The **Review the actions that will take place when you click Finish** window is displayed.
11. Review the database name and path and click the **Finish** button. The **Progress** dialog box is displayed. The processing can take 90 seconds or more.
When the database has been created, it is displayed in the Databases panel of the DB2 Control Center.
After the database is created, you must create an alias for it.
12. Right click on the word **DATABASE** and select **Add ...**. The **Add database** dialog box is displayed.
13. Make the following selections and complete the input fields as follows
 - a. Select **C:** from the Drive field pull down.

Note: The selection of the drive relates to the drive path where you installed your database.

- b. Select the database name from the pull down that you want to make an alias name for.
 - c. Input an alias name in the **Alias** field.
 - d. Input a comment about the alias name in the **Comment** field. For example, if you choose an alias of TSRDBAL, you might provide a comment like: *Alias for TSRDB.*
 - e. Leave the **Type** field unchanged.
14. Click the **OK** button on the dialog box. The DB2 Control Center window is displayed. In the Database panel, the alias database is displayed. (For this example, you can see the 3 databases as [SAMPLE, TSRDB, TSRDBAL (TSRDB)]).

The alias for the database has been created, but there is one more step. You must create an ODBC entry for the database.

15. Click the **Tools** selection in the menu bar of the DB2 Control Center. And then, select **Configuration assistant** from the options menu associated with the Tools selection. The **Configuration assistant** window is displayed.
16. Click the alias database to highlight it.

Note: The alias database might not display when you initially open the Configuration assistant. You might need to reboot your sever to have the alias database display.

17. Click **Selected** in the Configuration assistant window and then click **Change database ...** in the menu drop down of the Selected choice. The **Select a communications protocol** window is displayed.
18. Click the radio button next to TCP/IP and then, select the **Next** button. The **Specify TCP/IP communication parameters** window is displayed.
19. Provide the following input for the fields on this window:
 - a. Input the name of the host computer in the **Host name** field. If your host computer name is R60, that is what you put in this field. If you do not know the name of your host computer, perform the following steps:
 - 1) Right click the My Computer icon on your desktop and select Properties.
 - 2) Click the Computer Name tab.
 - 3) Record your computer name and return to the Specify TCP/IP communication parameters window.
 - 4) Input the name of your computer in the Host name field.
 - b. Input the name used in the initial installation in the **Service name** field. In this example, the name used in the initial installation was db2c_DB2.
 - c. Input the port number in the **Port number** field. The number might already be inserted and you do not need to change it. If you need to change it or think that the port number is wrong, click the **Retrieve** button. The correct port number is displayed in the field.
20. Click the **Next** button after you have completed the input fields on the Specify TCI/IP communication parameters window. The **Specify the name of the database to which you want to connect** window is displayed.
21. Provide the following input for the fields on this window:
 - a. Input the database name in the **Database name** field. This is the database that you want to connect to. In this example, the name used is TSRDB.

- b. Input the database alias name in the **Database alias** field. In this example, the name used is TSRDBAL.
 - c. Input a comment in the **Comment** field. You can input a comment like:
Alias for TSRDB.
22. Click the **Next** button. The **Register this database as a database source** window is displayed.
 23. Provide the following input for the fields on this window:
 - a. Click the checkbox next to **Register this database for CLI/ODBC**.
 - b. Click the radio button next to **A system data source**.
 - c. Change the default input from (name of alias database with AL to name with DS). In this example, you change the alias default name TSRDBAL to TSRDBDS. (AL = alias while DS = data source).
 - d. Do not change the default value in the Optimize for application field.
 24. Click the **Next** button. The **Specify the node options** window is displayed.
 25. Provide the following input for the fields on this window:
 - a. Input the operating system name in the **Operating system** field. In this example, the operating system is Windows.
 - b. Input the instance name in the **Instance name** field. In this example, the instance name is DB2.
 26. Click the **Finish** button. The Configuration assistant main window is displayed with a location identification displayed for the alias database.
 27. Close the Configuration assistant window.
 28. Close the DB2 Control Center window.

What to do next

You are now ready to install the Tape System Reporter application on the same server.

Installing the Tape System Reporter application on the server that has DB2 installed on it

Complete the task in this topic to install the Tape System Reporter application on the server that has DB2 installed on it.

Before you begin

It is recommended that you have already downloaded the Tape System Reporter application from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680> and placed it into the directory where the DB2 installer program resides.

About this task

Perform the following steps to install the Tape System Reporter application.

Procedure

1. Open the directory where the Tape System Reporter installer resides.
2. Double click the installer icon to begin the installation process. The **Tape System Reporter Install** window is displayed.

3. Accept the default destination folder displayed in the **Destination folder** field by clicking the **Install** button. If the destination folder displayed is not the one that you want, click the **Browse** button to find the path and directory that you want to use.

Note: You can manually input the path and directory folder that you want to use. If the directory folder does not exist, it is created automatically when you click the **Install** button.

The installer processes and the Tape System Reporter Welcome window is displayed.

4. Click the **Next** button. The **License agreement** window is displayed.
5. Click the **Yes** button to accept the License agreement. The **Choose Destination Location** window is displayed.
6. Accept the default location path (recommended) by clicking the **Next** button. If you do not want the location path chosen by the system, you can select a different path by clicking the **Browse** button and searching for the path that want to use.
7. Click the **Next** button. The Setup complete window is displayed which provides you the option of having the system place an icon for the Tape System Reporter application on your desktop.
8. Click the **Finish** button to complete the initial installation of the Tape System Reporter application.

What to do next

There are some post installation customizing adjustments that you must make to ensure that the Tape System Reporter application works with the DB2 application.

Post installation adjustments for the Tape System Reporter application

Complete this task to customize the Tape System Reporter application so that it can effectively function with the DB2 application when both applications reside on the same server.

About this task

Perform the following steps to customize the Tape System Reporter settings to allow functionality with DB2 when both applications are on the same server.

Procedure

1. Click the Tape System Reporter icon on your desktop to start the application. The first time you run the program, it displays the **Setup** dialog box. This dialog box is used to point to the database and create the tables used by the Tape System Reporter application.
There are two tabs on the dialog box: Database and Table.
2. Complete the input fields on the Database tab as follows:
 - a. Input the alias database name in the **Database Name** field. In line with the example used in this scenario, input TSRDBAL.
 - b. Input the name of the computer running DB2 in the **IP Address** field. In line with the example used in this scenario, input R60.
 - c. Input the IP port value in the **IP Port** field. In line with the example used in this scenario, input 50000.

3. Click the **Table** tab and complete the action on this tab as follows:
 - a. Input a name for the database table you want to create in the **Table Name** field. For example, you might use a name like: TSRDATA.
 - b. Click the **Create** button. When the table has been created successfully, a confirmation message is displayed.
4. Click the **Database** tab and then, click **OK**.
5. Click **Database** on the menu bar and then, click **Connection**. The **Database Connection** window is displayed.
6. Complete the actions on the Database Connection window as follows:
 - a. Input the username (db2admin) in the Username field.
 - b. Input the password that you created for the DB2Admin user (earlier in the installation process) in the Password field.
7. Click **OK**. A confirmation message that indicates: Connection successful, is displayed.

What to do next

The DB2 and Tape System Reporter application are now installed and ready for use. You can begin using the Tape System Reporter to monitor your TS3500s.

Installing the DB2 application on the server and the Tape System Reporter application on the client

The tasks within this section describe how to install the DB2 application on the server and the Tape System Reporter applications on the client.

You can choose to install the DB2 application on the server and the Tape System Reporter application on the client. To complete this installation, you need the following files:

- IBM Data Server Runtime Client (the actual file name is v9.7fp4_nt32_rtcl_EN.exe)
- Tape System Reporter Version 1.1 (or later) installation file

For ease of installation, download each file to the same directory on your computer. The latest version of these files can be downloaded from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680>.

Most of the configuration settings for both applications are established during the install process of each application. The installation process described in the following topics is quicker than when you install both applications on the same server.

Installing the IBM Data Server Runtime Client on the server

Complete this task to install the IBM Data Server Runtime Client on your server.

Before you begin

The IBM Data Server Runtime Client install file has been downloaded from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680> and placed in a directory on your computer.

About this task

Perform the following steps to install the IBM Data Server Runtime Client application on your server..

Procedure

1. Open the directory where you have stored the v9.7fp4_nt32_rtc1_EN.exe file.
2. Double click the v9.7fp4_nt32_rtc1_EN.exe file to begin the installation process. The **Preparing to install** window is displayed. This is the first window of the InstallShield Wizard that is used to install the application.
After your system is automatically configured to receive the IBM Data Server Runtime Client application, the **Installation Welcome** window is displayed.
3. Click the **Next** button. The **License Agreement** window is displayed.
4. Click the radio button next to the text, "I accept the terms in the License Agreement" and then, click the **Next** button. The **Select the installation type** window is displayed.
5. Click the radio button next to **Typical** and then click the **Next** button. The **Start copying files** window is displayed.
6. Verify that the installation settings are correct and click the **Install** button. The **Setup is complete** window is displayed.
7. Click the **Finish** button.

What to do next

You are now ready to install the Tape System Reporter application.

Installing the Tape System Reporter application

Complete this task to install the Tape System Reporter application.

Before you begin

The Tape System Reporter install file has been downloaded from <http://www-01.ibm.com/support/docview.wss?rs=1159&uid=ssg1S4000680> and placed in a directory on your computer.

About this task

Perform the following steps to install the Tape System Reporter application.

Note: It is not the installation of the Tape System Reporter application that determines its placement on the remote (client) server. It is the customization of the Tape System Reporter settings after installation that determine its placement on the client.

Procedure

1. Open the directory where the Tape System Reporter installer resides.
2. Double click the installer icon to begin the installation process. The **Tape System Reporter Install** window is displayed.
3. Accept the default destination folder displayed in the **Destination folder** field by clicking the **Install** button. If the destination folder displayed is not the one that you want, click the **Browse** button to find the path and directory that you want to use.

Note: You can manually input the path and directory folder that you want to use. If the directory folder does not exist, it is created automatically when you click the **Install** button.

The installer processes and the Tape System Reporter Welcome window is displayed.

4. Click the **Next** button. The **License agreement** window is displayed.
5. Click the **Yes** button to accept the License agreement. The **Choose Destination Location** window is displayed.
6. Accept the default location path (recommended) by clicking the **Next** button. If you do not want the location path chosen by the system, you can select a different path by clicking the **Browse** button and searching for the path that want to use.
7. Click the **Next** button. The Setup complete window is displayed which provides you the option of having the system place an icon for the Tape System Reporter application on your desktop.
8. Click the **Finish** button to complete the initial installation of the Tape System Reporter application.

What to do next

There are some post installation customizing adjustments that you must make to use the Tape System Reporter application on a remote (client) server.

Customizing the Tape System Reporter application for use on the remote (client) server

Complete this task to customize the Tape System Reporter application so that it can effectively function on the remote (client) server.

About this task

Perform the following steps to customize the Tape System Reporter settings. The customization described in this task allows functionality with DB2 when DB2 is installed on the server and you want the Tape System Reporter application on the remote server.

Procedure

1. Click the Tape System Reporter icon on your desktop to start the application. The first time you run the program, it displays the **Setup** dialog box. This dialog box is used to point to the database and create the tables used by the Tape System Reporter application.

There are two tabs on the dialog box: Database and Table.

2. Complete the input fields on the Database tab as follows:
 - a. Input the database name that you want to create in the **Database Name** field. For instance, you might use something like: TSRDB.

Note: The name you input must match the database name that was created in the DB2 installation.

- b. Input the domain name server (DNS) or TCP/IP address of the remote database server in the **IP Address** field. For instance you might use something like: R25.
 - c. Input the IP port value in the **IP Port** field. Always use this value: 50000.
3. Click the **Table** tab and complete the action on this tab as follows:

- a. Input a name for the database table you want to create in the **Table Name** field. For example, you might use a name like: TSRDATA.
 - b. Click the **Create** button. When the table has been created successfully, a confirmation message is displayed.
4. Click the **Database** tab and then, click **OK**.
5. Click **Database** on the menu bar and then, click **Connection**. The **Database Connection** window is displayed.
6. Complete the actions on the Database Connection window as follows:
 - a. Input the username (db2admin) in the **Username** field.
 - b. Input the password of the DB2 userID on the remote database server in the **Password** field.
7. Click **OK**. A confirmation message that indicates: Connection successful, is displayed.

What to do next

The DB2 and Tape System Reporter application are now installed and ready for use. You can begin using the Tape System Reporter to monitor your TS3500s.

Chapter 4. Report scenarios

The examples within this topic provide a guide for how you can use the IBM Tape System Reporter application in a practical way.

The IBM Tape System Reporter application allows you to generate an array of reports that can help you analyze the performance of your tape cartridges and tape drives. The following examples are presented to show you how you can use the reports in your analysis process.

Investigating drive performance

Imagine that you want to see how the drives in the sltlib1 library are performing. The sltlib1 library has drives on Frame 2 and Frame 3. You select to build a custom report that queries Frame 2 and drives 5 - 12 and Frame 3 drives 1 and 2. You submit the bar graph query and the following report is displayed:

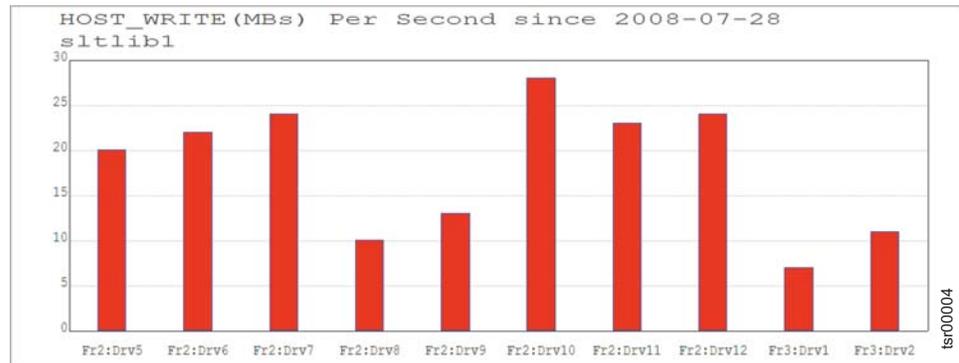


Figure 2. Drive Performance

This report shows that Drives 8 and 9 on Frame 2 and Drives 1 and 2 on Frame 3 are performing lower than the other drives. In other words, they are slower in Mbps.

The graph does not tell you why these drives are performing slower, however it does point out an area of concern. You can investigate deeper to see if the slow transfer rates were caused by a bad cartridge, slow adapter, the drive itself, and so on.

Workload balancing through drive residency analysis

Imagine that you want to see if your tape cartridges at IP Address 9.11.120.74 are being used as you thought so that you obtain your desired workload balance. You select to build a custom report for DRIVE_RESIDENCY on I/P Address 9.11.120.74. You also specify Frame 1 drives 1, 4, and 7 and Frame 2 drives 1, 11, and 12 and a time frame (the example shows a starting date of 6/5/2008). You submit the bar graph query and the following report is displayed:

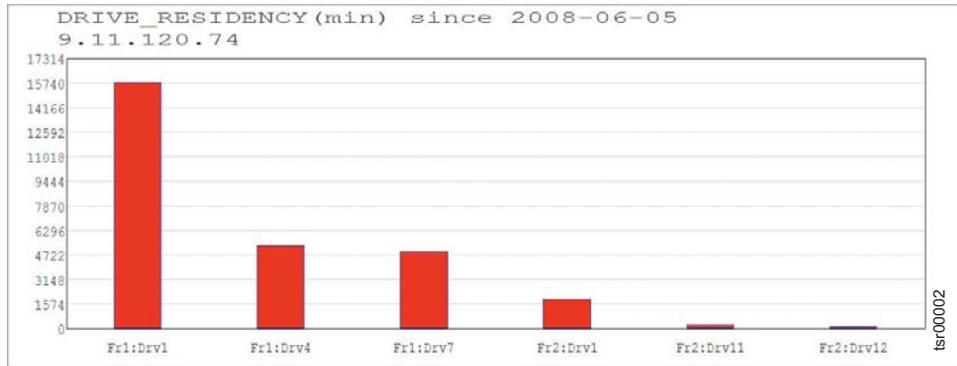


Figure 3. Drive residency report

The report shows that Drive 1 in Frame 1 is being used more than the other drives queried. This could be from a cartridge just sitting in the drive or because it is being used much more than the others. The report does not answer why the condition exists. It just provides a hint about where to begin further investigation.

Workload balancing through host writes drive analysis

Imagine that you want to see if the drives at I/P Address 9.11.120.74 are being used efficiently. You select to build a custom report for HOST_WRITE (Mbps) on I/P Address 9.11.120.74. You also specify Frame 1 drives 1, 4, and 7 and Frame 2 drives 1, 11, and 12 and a time frame (the example shows a starting date of 6/5/2008). You submit the bar graph query and the following report is displayed:

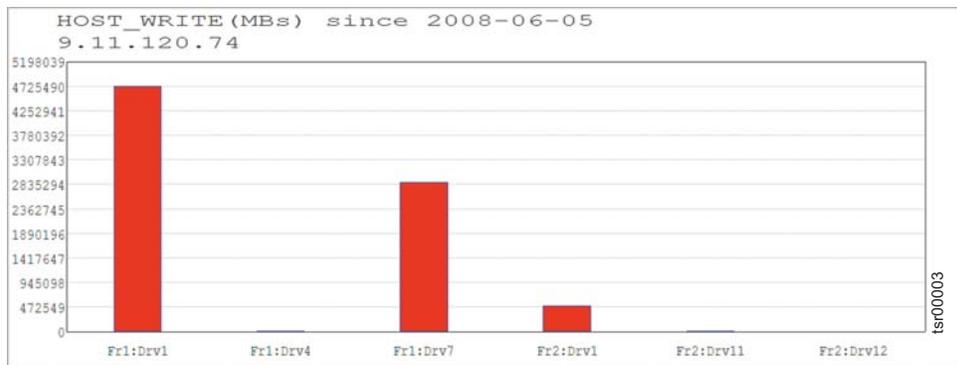


Figure 4. Drive report

The report shows that drives 1 and 7 write much more data than the other drives. This might indicate that there is a problem that is affecting your workload balancing plan. While the report does not tell you why this is occurring, it does reveal an area that you can check to improve your workload balancing process.

Workload balancing through drive usage analysis

Imagine that you want to see which drives are being used the most at I/P Address 9.11.120.74. You select to build a custom report for LIFE_MOUNTS_MEDIA on I/P Address 9.11.124.74. You also specify Frame 1 drives 1, 4, and 7 and Frame 2 drives 1, 11, and 12 and a time frame (the example shows a starting date of 6/5/2008). You submit the bar graph query and the following report is displayed:

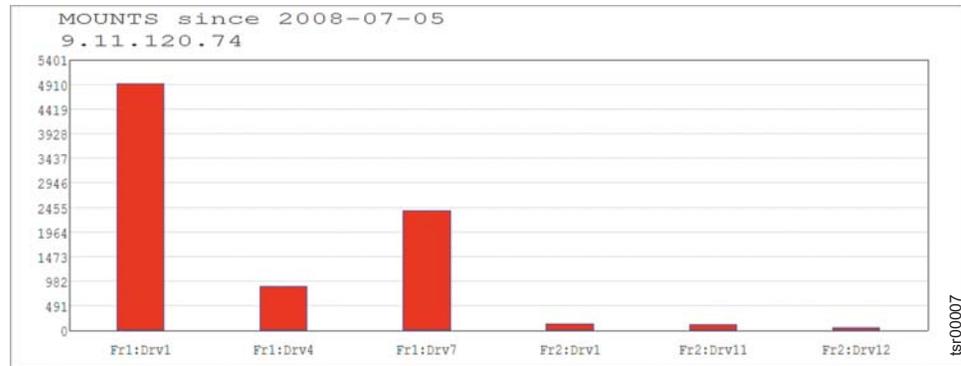


Figure 5. Drive mount report

The report shows that Drive 1 in Frame 1 is being used much more than any of the other drives. If your concern is even wear for your drives and workload balancing, the report helps you to pick an area to start your investigation.

Drive efficiency through write retry analysis

Imagine that you want to see if your tape cartridges at I/P Address 9.11.199.194 are operating at peak efficiency. You select to build a custom report for WRITE_RETRIES (count) on I/P Address 9.11.199.194. You specify ten tape cartridges and a time frame (the example shows a starting date of 6/5/2008). You submit the bar graph query and the following report is displayed:

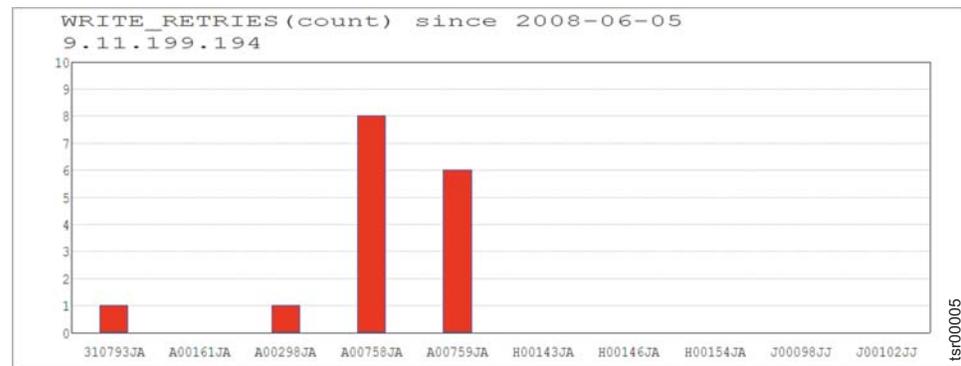


Figure 6. Write retries report

The report shows you that the A00758JA and A00759JA cartridges are having problems writing data as they have more write retries than the other cartridges. While the report does not tell you why this is occurring, it does reveal an area that you can check.

Analyzing the TapeAlerts

Imagine that you want to see the count and type of tape alerts that you are receiving at I/P Address 9.11.124.49. You select to build a custom report for TAPEALERT_MEDIA on I/P Address 9.11.124.49. You also specify tape alert flags 2, 11, 16, 18, 20, and 30 and a time frame (the example shows a starting date of 6/5/2008). You submit the bar graph query and the following report is displayed:

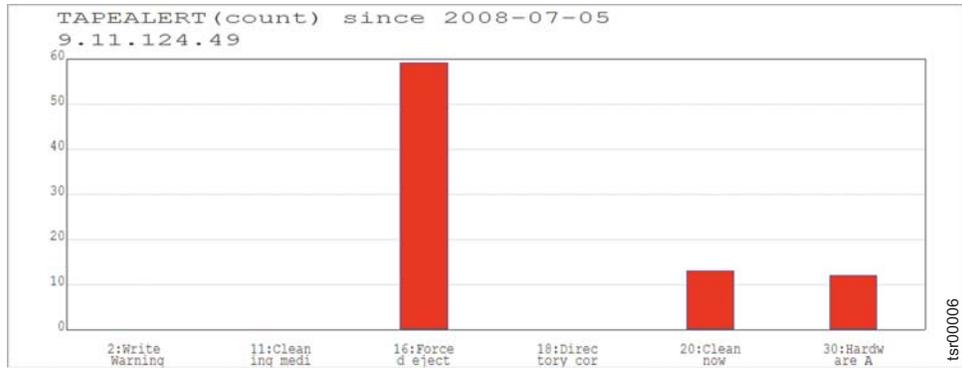
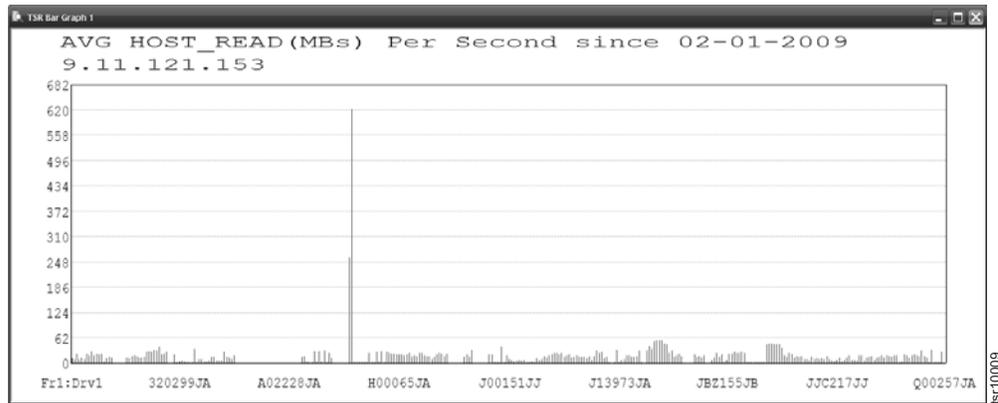


Figure 7. TapeAlerts report

The report shows that I/P Address 9.11.124.49 is receiving numerous Forced Ejects alert notices. You can use this information to take the appropriate action for the given warning.

Selecting all drivers and volsers

Imagine that you want to see the average HOST read (MBs) per second for all your drivers and volsers. You initially request this as a line graph and the following report is generated:



The line graph provides an overview of all the information and as you can there are a few spikes. To get the details related to those spikes you need to return to the custom report window and request a table view.

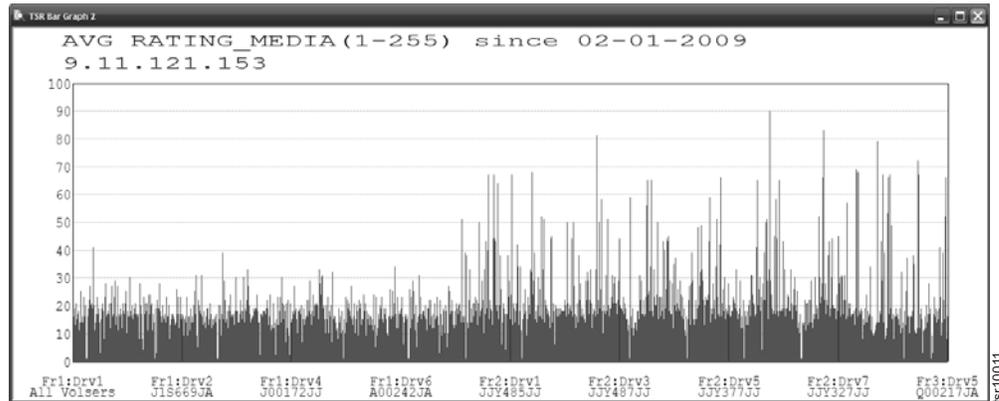
A table view request provides the following report:

ROW	DRIVE/VOLSER	HOST_READ(S) Per Second
1	Fr1:Drv1	11
2	Fr1:Drv2	8
3	Fr1:Drv3	22
4	Fr1:Drv4	9
5	Fr1:Drv5	12
6	Fr1:Drv6	8
7	Fr2:Drv1	22
8	Fr2:Drv2	18
9	Fr2:Drv3	27
10	Fr2:Drv4	19
11	Fr2:Drv5	22
12	Fr2:Drv6	21
13	Fr2:Drv7	22
14	Fr3:Drv1	2
15	Fr3:Drv3	11
16	Fr3:Drv4	15
17	Fr3:Drv5	13
18	Fr6:Drv1	0
19	Fr6:Drv2	0
20	Fr6:Drv4	0
21	Fr6:Drv5	0
22	Fr6:Drv6	0
23	0002331A	13
24	0002341A	11
25	0002351A	16
26	0006431A	18
27	3105031A	17
28	3105051A	12
29	3105941A	12
30	3106871A	15
31	3107901A	25
32	3107921A	29
33	3107931A	26

The Table view report provides detailed data for each point in the previous graph and allows you to determine which volsers are not performing as they should. The table view displays the exact values for each point so that you can pinpoint spikes and dips easier.

Rollup report with ccSars

Imagine that you request a custom line graph report to see Host Rating Media for a combination of selected drives and volsers. The report is generated and it displays the overview activity for the drives and volsers that you selected:



As you can see this is a very active report. If you want the detailed information about the graph, run the same report but request that it be displayed as a table view. The Table View report displays the same average values since the given date and also displays the min(imum) and max(imum) values since the given date. In addition, the report displays the Lifetime min(imum), average, and max(imum) values. This allows you to see how the drive or volser is doing in comparison to its lifetime, and a more detailed view of the selected time frame.

Note: According to the tape drive SCSI specifications, the quality summary efficiency parameters are designed to be used in trending analysis. An average 'good' quality value is 64 while a steady value above 128 indicates a degraded condition.

The Table View request generates the following report:

ROW	PRIME and DRIVE	VOLSER	MIN RATING_MEDIA(1-255)	AVG RATING_MEDIA(1-255)	MAX RATING_MEDIA(1-255)	LPTIME MIN RATING_MEDIA(1-255)	LPTIME AVG RATING_MEDIA(1-255)	LPTIME MAX RATING_MEDIA(1-255)
1	Fr1DrV1	All Volumes	1	17	41	1	17	41
2	Fr1DrV1	0002331A	9	23	23	9	23	23
3	Fr1DrV1	0002241A	7	16	24	7	16	24
4	Fr1DrV1	0002521A	19	19	19	19	19	19
5	Fr1DrV1	0009641A	10	13	16	10	13	16
6	Fr1DrV1	A001981A	19	21	22	19	21	22
7	Fr1DrV1	A001651A	7	15	24	7	15	24
8	Fr1DrV1	A001721A	13	17	20	13	17	20
9	Fr1DrV1	A001761A	12	18	24	12	18	24
10	Fr1DrV1	A001771A	7	11	14	7	11	14
11	Fr1DrV1	A002401A	5	11	17	5	11	17
12	Fr1DrV1	A002421A	14	14	14	14	14	14
13	Fr1DrV1	A001931A	14	28	37	14	28	37
14	Fr1DrV1	A002571A	5	14	22	5	14	22
15	Fr1DrV1	A002721A	14	18	20	14	18	20
16	Fr1DrV1	A002781A	7	14	28	7	14	28
17	Fr1DrV1	A005961A	17	23	29	17	23	29
18	Fr1DrV1	A006551A	13	16	18	13	16	18
19	Fr1DrV1	A023021A	13	17	20	13	17	20
20	Fr1DrV1	A023081A	8	20	39	8	20	39
21	Fr1DrV1	CLN0421A	1	1	1	1	1	1
22	Fr1DrV1	CLN0481A	1	1	1	1	1	1
23	Fr1DrV1	2001501J	12	16	18	12	16	18
24	Fr1DrV1	2001521J	18	19	20	18	19	20
25	Fr1DrV1	2001531J	18	22	30	18	22	30
26	Fr1DrV1	2001541J	18	27	32	18	27	32
27	Fr1DrV1	2001551J	20	20	20	20	20	20
28	Fr1DrV1	2001561J	13	15	16	13	15	16
29	Fr1DrV1	2001581J	19	21	19	19	21	19
30	Fr1DrV1	2001591J	19	19	19	19	19	19
31	Fr1DrV1	2001601J	41	41	41	41	41	41
32	Fr1DrV1	2001611J	18	20	22	18	20	22
33	Fr1DrV1	2001621J	11	11	11	11	11	11

All inclusive TableAlert report

Imagine that you want to view all the TableAlerts that have been issued over a time period on all your drives and volsers. You submit a custom report request to display this information. The following report is generated:

ROW	TapeAlert	TAPALERT(count)
1	1-Read Warning	0
2	2-Write Warning	0
3	3-Hard error	0
4	4-Media	0
5	5-Read failure	0
6	6-Write failure	0
7	7-Media life	0
8	8-Hot data grade	0
9	9-Write protect	0
10	10-No removal	0
11	11-Cleaning media	1
12	12-Unsupported format	0
13	13-Unsupported tape	0
14	14-Chip failure	0
15	15-Read error	0
16	16-Read only format	0
17	17-Directory corrupted in CM	0
18	18-Cleaning media life	0
19	20-Clean now	7
20	21-Clean periodic	3
21	22-Supern clean	0
22	23-Invalid cleaning cartridge	0
23	25-Dual-port interface error	0
24	26-Cooling fan failure	0
25	27-Power supply	0
26	30-Hardware A	12
27	32-Hardware B	0
28	32-Interface	0
29	33-Eject media	0
30	34-Download fail	0
31	36-Drive temperature	0
32	37-Drive voltage	0
33	38-Drive failure	0

In the table, you can see that TapeAlert 20, 21 and 30 have come up on this library.

To refine the view, run the report again but when it asks for the TapeAlert values, select only one, in this case we selected TapeAlert 20. The resultant report displays which drives and/or volsers gave the TapeAlert 20 error. The table displays that the cleaner cartridge issued all 7 errors and which drives they were issued on. The following report is generated:

ROW	DRIVE/VOLSER	TAPALERT 20-Clean now(count)
2	Fr3DrV2	0
3	Fr3DrV3	1
4	Fr3DrV4	0
5	Fr3DrV5	1
6	Fr3DrV6	0
7	Fr3DrV7	1
8	Fr3DrV8	0
9	Fr3DrV9	0
10	Fr3DrV10	1
11	Fr3DrV11	1
12	Fr3DrV12	1
13	CLN0161A	7
14	A002811A	0
15	P002861A	0
16	P002891A	0
17	P002901A	0
18	P002921A	0
19	P003591A	0
20	21M5431A	0
21	21M5411A	0
22	21M5421A	0
23	21M5431A	0
24	21M5431A	0
25	21M5431A	0
26	21M5431A	0
27	21M5431A	0
28	21M5501A	0
29	21M5511A	0
30	21M5521A	0
31	21M5531A	0
32	21M5541A	0
33	21M5551A	0
34	21M5571A	0

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International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

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IBM Taiwan Corporation
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rusemi

Glossary

Glossary

This glossary defines the special terms, abbreviations, and acronyms used in this publication and other related publications. If you do not find the term you are looking for, see the IBM Glossary of Computing Terms at the following Web site: www.ibm.com/ibm/terminology.

A

Advanced Library Management System (ALMS)

A UNIX operating system developed by IBM that is designed and optimized to run on POWER microprocessor-based hardware such as servers, workstations, and blades.

B

backup

The short-term retention of records used for restoring essential business and system files when vital data has been lost because of program or system errors or malfunctions.

E

element address

The SCSI term for the host's view of a cartridge location.

I

IBM System Storage TS3500 Library

Formerly known as the IBM TotalStorage 3584 Tape Library, a device that can be attached to one or more supported servers and used to write data to and from magnetic tape. The library, is also known as the 3584 Tape Library.

P

port A system or network access point for data entry or exit. This term might also be defined as a connector on a device to which cables for other devices such as display stations and printers are attached.

R

read To acquire or interpret data from a storage device, from a data medium, or from another source.

T

tape alert flags

Status and error messages that are generated by the TapeAlert utility and display on the host console. The messages indicate the type of problem and tell how to resolve it.

V

volser Volume serial number.

Index

A

Apache Derby
 configuration 5
 set up 5

C

client setup procedure 12, 15
connection procedure 19
Custom report 23

D

database type 15
date format 15
DB2
 create alias 35
 create database name 35
 create ODBC 35
 install Data Server Runtime 40
 server install 33
 server install overview 33, 40
Derby database 12

E

external web connection 12

G

General SQL Query reports 23

I

install procedure 12

J

Java configuration 10

M

menu bar 18
Monitor report 23
monitor reports 24

O

Oracle configuration 8

S

setup procedure, client 15
start monitoring 24

T

Tape System Reporter
 apache derby configuration 5
 apache derby set up 4
 ccSARs 24
 client install 42
 client install overview 40
 connection procedure 19
 create table 20
 customize for DB2 39
 database type 15
 date format 15
 default directories 4
 delete table 20
 external web connection 12
 hardware accessory needs 4
 install procedure 12
 install where DB2 resides 38
 Java configuration 10
 Java considerations 4
 key considerations 4
 menu bar 18
 monitor reports 24
 normal install 41
 Oracle configuration 8
 overview 1
 reports 23
 server install overview 33
 setup procedure, client 12, 15
 start monitoring 12
 tape drives supported 24
Trademarks 52

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IBM System Storage TS3500 Tape Library with ALMS
Tape System Reporter User's Guide

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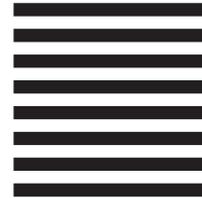
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