
Tivoli Decision Support for Storage Network Management Analysis Release Notes

Version 1.1.0

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Tivoli Decision Support for Tivoli Storage Network Manager (May, 2001)

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Release Notes

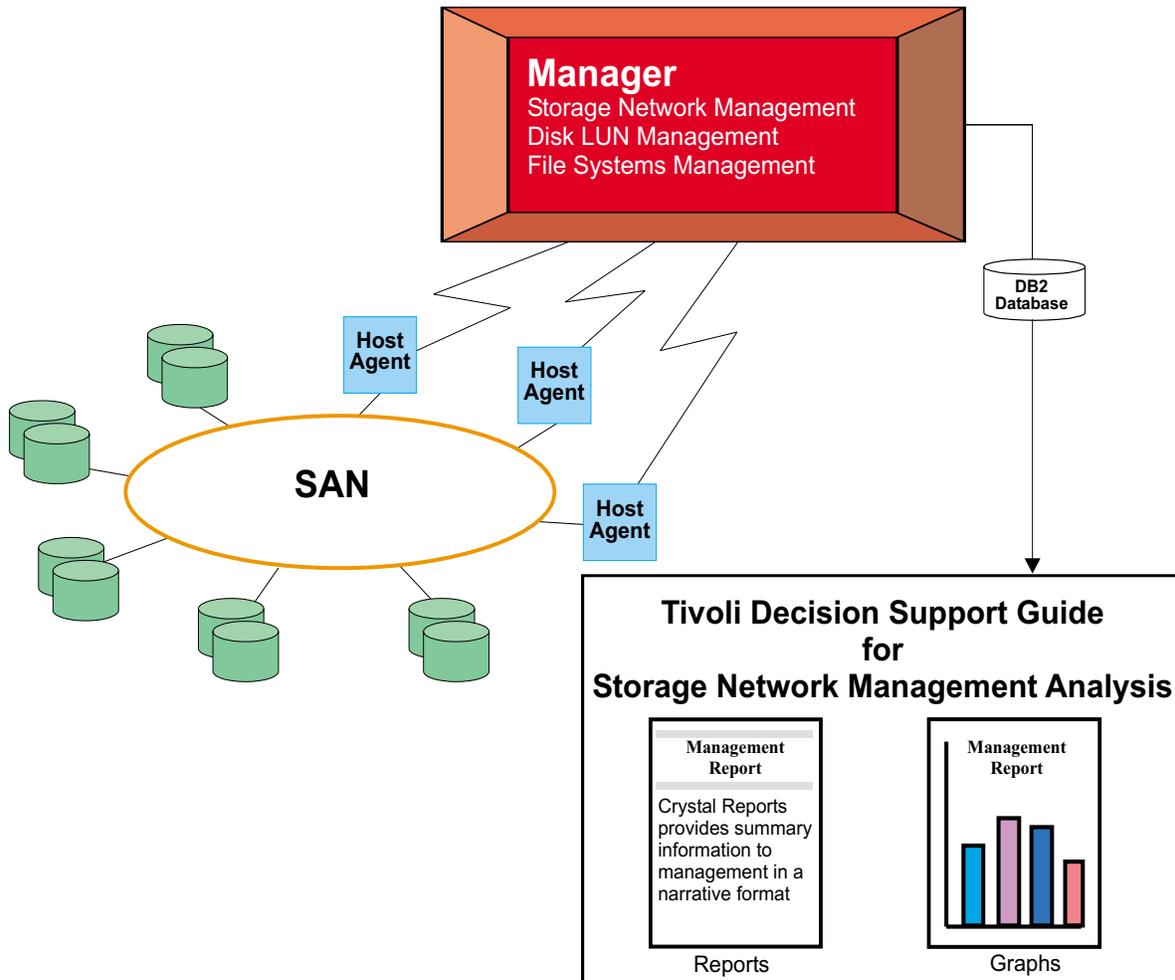
This document describes the *Tivoli® Decision Support for Storage Network Management Analysis 1.1.0*. This document is the most current information for the product and takes precedence over all other documentation. It is intended for storage administrators who manage Storage Area Network (SAN) resources.

PLEASE REVIEW THE RELEASE NOTES THOROUGHLY BEFORE INSTALLING OR USING STORAGE NETWORK MANAGEMENT ANALYSIS.

These release notes include the following topics:

- “Storage Network Management Analysis Description” on page 2
- “System Requirements” on page 4
- “Preparing for Installation” on page 6
- “Installing Storage Network Management Analysis” on page 8
- “Loading DB2 Views Using Command Center” on page 9
- “Restoring Storage Network Management Analysis Defaults” on page 12
- “Troubleshooting” on page 12
- “Prerequisite and Related Documents” on page 17
- “Software Defects, Limitations, and Workarounds” on page 17
- “Contacting Customer Support” on page 18

The figure below provides an overview of the Tivoli Decision Support for Storage Network Management Analysis system.



Storage Network Management Analysis Description

Tivoli Decision Support for Storage Network Management Analysis accommodates the analysis needs for managing SAN resources such as Logical Unit Names (LUNs), servers, file systems, and switches. Storage Network Management Analysis provides reports on inventory, utilization, and monitoring of SAN resources. The reports are based on data accessed by the Tivoli Decision Support (TDS) tool and provide an overview of the SAN environment.

The Tivoli Storage Network Manager (TSNM) database is the central data source for the Storage Network Management Analysis guide. The three applications that populate the TSNM database tables are Storage Network Management, Disk LUN Management, and File Systems Management (see figure above).

The data used by Storage Network Management Analysis is stored in a Relational Database Management System (RDBMS). The Storage Network Management Analysis guide accesses the TSNM DB2 relational database directly, generating multidimensional graphic and detailed text reports on SAN resources. The content and detail of the reports depend on the type of data that is available from the database. Tivoli Decision Support for Storage Network Management Analysis extracts and analyzes the data and displays the reports in the Tivoli Discovery Interface.

The Tivoli Decision Support Discovery Administrator contains pre-defined queries that extract data from Tivoli Storage Network Manager into a delimited text file or a comma separated values (.csv) file. Cognos Transformer builds a cube from the .csv file, and Cognos PowerPlay displays graphical reports based on the cube data. Text reports display information directly from the RDBMS tables and views. Text reports are managed by Seagate Crystal Reports.

A DB2 schema, defining nine database views, is provided on the Storage Network Management Analysis guide CD-ROM. See “Loading DB2 Views Using Command Center” on page 9. This schema must be loaded into the TIVOLSAN TSNM database before you can display certain Powerplay and Crystal reports. Look at the Hints window at the bottom of the Tivoli Decision Support Discovery Interface to see if a particular report is dependent on the database views.

Note: “TIVOLSAN” is the default name. The database may be called by a different name.

Topics and Views

The data collected for a Storage Network Management Analysis guide is organized into topics and views on the Tivoli Decision Support Discovery Interface. Storage Network Management Analysis provides one overall category called Tivoli Network Storage Management Resource Analysis. Contained within the category are the following topics:

- “Capacity and Usage of SAN Resources” on page 16
- “Inventory of SAN Resources” on page 16
- “Monitoring of SAN Resources” on page 17

When you open the Discovery Interface, the panel to the left lists the guide components. If you select a view within a topic, either the reporting database is queried to generate a Crystal Report, or the results of a cube build are examined to display a graphical report. Each view (preceded by an icon representing a graphical chart or report page) displays a report in the right panel and a description of that report in the bottom panel.

The Tivoli Decision Support Discovery Administrator provides the interface to manage the cube builds used by the Storage Network Management Analysis guide. You must build both Storage Network Management Analysis cubes before you start the Discovery Interface, so that you can view the graphical reports. See “Building the Cubes” on page 11.

For more information about how to use the Tivoli Decision Support Discovery Interface, see the *Tivoli Decision Support User’s Guide*, and the *Tivoli Decision Support: Using*

Decision Support Guides documents identified in “Prerequisite and Related Documents” on page 17.

Inventory of SAN Resources

Views in the inventory topic list the major components of the SAN and their current status. Inventoried SAN components include:

- Storage devices, such as hard disk, tape, optical
- SAN Fabric Components, such as switches, hubs, gateways

The devices are listed by TSNM LUN ID where applicable. These reports also show the Host to LUN ID assignments for storage devices.

Capacity and Usage of SAN Resources

The capacity and usage views provide information on the capacity and current space utilization for SAN connected storage devices. This information is reported in terms of physical volume, logical volume and file system.

Total capacity is also reported for TSNM LUN IDs that are part of a storage subsystem.

Monitoring of SAN Resources

Views in the monitoring topic will alert you to file systems that are nearing or exceeding their threshold for utilization. This threshold is expressed in terms of percent utilization (default = 90%).

This topic will also provide a list of TSNM LUN IDs that are currently in an error state (SAN Manager State = Suspect or Missing).

System Requirements

This section describes the system requirements, including software and hardware, necessary to install and use Tivoli Decision Support for Storage Network Management Analysis.

Software Requirements

For a new Tivoli Decision Support installation, review the *Installation Guide* identified in “Prerequisite and Related Documents” on page 17 so that you can determine the needs of your environment.

For existing Tivoli Decision Support environments, review the current TDS 2.1 patches. For a TDS 2.1 installation the minimum patches at the release of the Storage Network Management Analysis guide are: 21-TDS-0001, 21-TDS-0004, and 21-TDS-0005.

The following software must be installed in your environment:

- Windows NT 4.0 with Service Pack 4 and Y2K Patches, Windows NT 4.0 with Service Pack 5, Windows 95 OSR 2, or Windows 98

- Communication Protocol: TCP/IP
- Tivoli Decision Support 2.1 with patches or Tivoli Decision Support 2.1.1, including:
 - Tivoli Discovery Interface
 - Tivoli Discovery Administrator
 - Cognos PowerPlay installed from TDS CD
 - Seagate Crystal Reports runtime driver (automatically installed as part of TDS)
 - Although not required, you can use Microsoft Access to help support Tivoli Decision Support.
- The following relational database management system and the 32-bit ODBC database client driver:
 - IBM® Database 2™ (DB2®) Version 6.1

Hardware Requirements

Tivoli Decision Support must be installed on an IBM PC AT-compatible machine. Tivoli does not support platforms (such as the NEC PC 98xx series) that are not 100% compatible with the IBM PC AT.

Hardware requirements depend on the software configuration:

- If TDS is intended as a server installation, the requirements are:
 - **Processor:** Intel-based Pentium 450MHZ (minimum)
 - **Memory:** 256MB (minimum)
 - **Disk Space:** 200MB for the software, 400MB minimum for the cubes (depending on the Tivoli Storage Manager enterprise size)
- If the Tivoli Discovery Interface and Storage Network Management Analysis are intended as a client installation, the requirements are:
 - **Processor:** Intel-based Pentium 300MHZ (minimum)
 - **Memory:** 128MB (minimum)
 - **Disk Space:** 100MB for the software

We recommend that you use Tivoli Decision Support on a file server. If the TDS client software resides on the file server as a shared resource, and each client loads the application from the file server, a highly fault tolerant configuration is recommended. However, if you install TDS in stand-alone mode, a file server is not required.

Note: The network connection between the file server and the client software must support long file names.

Preparing for Installation

You must perform the following tasks before installing Storage Network Management Analysis:

1. Ensure that the software requirements for Storage Network Management Analysis are met. See “System Requirements” on page 4.
2. You will need to load the views in the TSNM database in order to open all the reports. See “Loading DB2 Views Using Command Center” on page 9.
3. If you have not already installed TDS, go to the following steps:
 - “Installing Tivoli Decision Support” on page 6.
 - “Installing Cognos” on page 6.
 - “Installing Adobe Acrobat” on page 6.
 - “Installing the ODBC Drivers” on page 7.
4. After TDS is installed and upgraded to proper patch level, go to “Configuring the Shared Source File Path” on page 7.

Note: Always check the Tivoli support website for recent patches to TDS versions. See “Contacting Customer Support” on page 18.

After these tasks are completed, go to “Installing Storage Network Management Analysis” on page 8.

Installing Tivoli Decision Support

Refer to the *Tivoli Decision Support Installation Guide* listed in “Prerequisite and Related Documents” on page 17.

TDS may be installed in stand-alone or network mode. We recommend a network installation. Network-mode installation involves the following process:

1. Installing the server components on a file server.
2. Installing the Tivoli Discovery Administrator on the system administrator’s machine.
3. Installing the client component (the Tivoli Discovery Interface) on each client system.

Installing Cognos

Cognos is delivered on the TDS CD. Refer to the *Tivoli Decision Support Installation Guide* listed in “Prerequisite and Related Documents” on page 17.

Installing Adobe Acrobat

Acrobat is delivered on the TDS CD. Refer to the *Tivoli Decision Support Installation Guide* listed in “Prerequisite and Related Documents” on page 17.

Configuring the Shared Source File Path

Before using the Tivoli Discovery Administrator and the Tivoli Discovery Interface, you must configure them to locate certain files (called source files) that are stored on your local system or on the network.

If you installed TDS in stand-alone mode, your source files are located on your system (typically in C:\Program Files\TDS 2.1). This information is already set and you do not need to specify a shared source file path. If the path changes, however, refer to the *Tivoli Decision Support Administrator Guide* listed in “Prerequisite and Related Documents” on page 17.

For network-mode installations, the source files usually reside on a network or file server. Specify the path to the source files when you start the Tivoli Discovery Administrator for the first time.

To set the shared source file path, follow these steps:

1. Select **View -> Options**. The Options dialog box appears.
2. Click the **General** tab on the Options dialog.
3. In the **Network** box, type the location (typically <network drive>\Program Files\TDS 2.1) of the following folders:
 - **Cubes**
 - **Data**
 - **Reports**
4. Click **OK**.

Note: Be sure that your network administrator provides Discovery Interface users with read only access for network permissions of these folders and files. TDS administrators responsible for building cubes will need different permissions.

Installing the ODBC Drivers

Install the OEM ODBC drivers on both the Tivoli Discovery Interface and the Discovery Administrator machines if you are installing in network-mode. The OEM ODBC drivers are provided by the RDBMS vendors. To ensure that the latest drivers are installed, you may have to download the drivers from the vendor’s Web site.

Storage Network Management Analysis supports one database:

- DB2 Version 6.1

Consult your database administrator for the appropriate client configuration.

Your system must have a valid client configuration for the ODBC connection that TDS uses to access your database.

Setting up ODBC Data Source Connection

Completing the ODBC connection involves several steps and is dependent on the installation of the database client. For new TDS installations, you must set up your DB2 database servers as an ODBC data source.

1. From the DB2 Client Configuration Assistant, select **Add**.
2. Follow wizard prompts.
3. Enter host name, database name, and a DB2 alias in appropriate windows.
4. Click **Done**.
5. Test the connection with the appropriate user id and password.

Installing Storage Network Management Analysis

This section describes the procedure for installing Tivoli Decision Support for Storage Network Management Analysis. The procedure can be summarized as follows:

- “Installing Storage Network Management Analysis” on page 8.
- “Importing Storage Network Management Analysis” on page 8.

Installing Storage Network Management Analysis

From the Tivoli Decision Support for Storage Network Management Analysis CD-ROM:

1. Insert the CD-ROM in your workstation drive, and the autorun feature will prompt you.
2. Select **Tivoli Decision Support for Storage Network Management Analysis**.
3. At the Installation dialog box, click **Tivoli Decision Support for Storage Network Management Analysis**.
4. When the Read me dialog box appears, click **Accept**.
5. Click on **Next** and then **Finish** to complete the installation. Then click **Exit**.

The online documentation and the README file are installed in this directory:

```
...\TDS 2.1\Guide Docs\Tivoli Decision Support for Storage  
Network Management Analysis
```

Importing Storage Network Management Analysis

To import Storage Network Management Analysis into the Tivoli Discovery Administrator console, open the Administrator and perform the following steps for a new TDS 2.1.1 installation:

Note: See “Running the Tivoli Discovery Administrator for the First Time” in the Tivoli Decision Support Administrator Guide for a complete description.

1. When you are prompted to import an installed discovery guide, and to connect to a data source, click **Yes**.

2. Select **Import Installed Decision Support Guide**. Click **Next**.
3. Select **Storage Network Management Analysis**. Click **Next** and **Finish**.
4. Click the **Data Sources** tab. Select **Add**.
5. From **Datasource Name** dropdown list, select data source.
6. Enter the database user name and password. Click **Next**.
7. Enter the database qualifier. Click **Next**. Click **Finish**. If you are unsure, contact your database administrator.

For existing TDS users with other installed guides, perform the following steps:

1. Open the **TDS Administrator**.
2. Select **Decision Support Guide** from the dropdown menu.
3. Select **Import** from the dropdown list.
4. Select **Storage Network Management Analysis**. Click **OK**.

Configuring Storage Network Management Analysis

To configure Storage Network Management Analysis, you must perform the following tasks in the order listed below:

1. “Loading DB2 Views Using Command Center” on page 9.
2. “Adding, Assigning, and Verifying a Data Source” on page 10.
3. “Building the Cubes” on page 11.
4. “Scheduling the Cube Build Task” on page 11.

Loading DB2 Views Using Command Center

A series of related database views must be loaded in the TSNM database to support file system analysis.

In order to load the views:

1. Start the DB2 Command Center.
 - Connect to the TIVOLSAN (default) database by typing **CONNECT TO TIVOLSAN USER _<ID>_**. In most cases, the ID will be **Tivoli**.

Note: If it is not “Tivoli”, see your database administrator.

- Execute the command by clicking **Control+Enter**.
 - Enter the password at prompt.
2. Go to...\\TDS 2.1 > Util Directory > Tivoli Decision Support for Storage Network Management Analysis > CreateViews.sql.
 - Open views into any text editor such as Notepad or Wordpad.
 - Click **Edit, Select All, Copy**.

3. Click **Script** tab.
4. Paste contents of clipboard to the Script window of the DB2 Command Center.
5. Click **Control+Enter**. You should get the following message:
“The SQL command completed successfully.”
6. Disconnect from the TIVOLSAN database by entering **DISCONNECT TIVOLSAN** in the Script window of the DB2 Command Center.
7. Close the DB2 Command Center.

Adding, Assigning, and Verifying a Data Source

For each query in a Tivoli Storage Network Manager (TSNM) cube, you must add, assign, and verify a data source.

To configure ODBC connections with a new TDS 2.1 installation, you will be prompted about assigning data sources. Follow the prompts.

The following instructions address data source assignments from the TDS Administrator when you have other guides installed.

1. From the **Data Source** dropdown list, select **Add**. The **Add Data Source** wizard will appear. Follow the wizard prompts:
 - Select the ODBC data source name from the dropdown list.
 - Enter user name and password.
 - Enter the database table qualifier. Click **OK**. (Check with your database administrator for this information. The qualifier will most likely be **Tivoli**.)
2. From the **Data Sources** dropdown list select **Assign Data Source**. In the **Assign Data Source** window select the **Data Source** you added from the dropdown list. All currently added ODBC data source name connects will appear in the dropdown list. If other guides are installed, you only want to select those queries associated with Tivoli Decision Support for Storage Network Management Analysis. Click **OK** after each one you select.
3. Click the **Data Sources** folder in the Administrator panel.
4. Right click on the data source you just assigned. Select **Test Connectivity**.
5. If the connection is successful, the **Test Data Source** dialog box displays the message `Connection Successful`.

If the connection is unsuccessful, a Tivoli Discovery Administrator message dialog box appears with the message: `Error connecting to Data Source - DataSourceName`

Click **Details** to display more information about the connection error. Click **OK**, then verify the data source definition, userid, password, and qualifier.

Building the Cubes

The graphical reports using the multidimensional cubes will present data as of the point in time when the cube is built. Determine what your enterprise requires, regarding this data, and plan your cube build times. Our recommendation is to build cubes daily during a period of decreased database activity. TDS also provides a scheduler so you can set up automatic cube builds.

Cube building is done from the **Administrator** panel of the Tivoli Discovery Administrator console. Perform these steps to build a cube:

1. Double-click **Cubes** on the Administrator panel.
2. Right-click on the desired cube and select **Build**. The Confirm Cube Build dialog box displays the DB qualifier.
3. Click **Yes**. TDS connects to your database and retrieves the records specified in your query. The size of your data and the network speed affect the time required to retrieve all records. Use the status bar to check the status of the processing. The Cube Transform Status dialog box displays processing messages after the queries are complete and the actual cube build starts.
4. Review the processing messages for any errors. If an error generates an error dialog box, review the error, and then click **OK**. See “Troubleshooting” on page 12 for help identifying common cube build problems.
5. Click **Close**.

Scheduling the Cube Build Task

You must periodically rebuild the cube to update your cube data. The build process can be scheduled to build automatically at regular intervals. Stagger the start times for your cube builds for improved performance.

The following application uses the Tivoli Discovery Administrator to create a cube building schedule and to determine the schedule TaskID. You can use this application to schedule cube builds:

- Tivoli Decision Support Process Scheduler

To see a sample scheduling procedure using the Tivoli Decision Support Process Scheduler, refer to the “Scheduling Cube Builds” section of the *Tivoli Decision Support 2.1 Administrator Guide*.

Uninstalling Storage Network Management Analysis

To uninstall Storage Network Management Analysis:

1. From the Tivoli Discovery Administrator, select the **Decision Support Guides** folder.
2. From the Properties pane, right click on **Storage Network Management Analysis**.
3. From the submenu that is displayed, choose **Delete** and then **Yes**.

Restoring Storage Network Management Analysis Defaults

The queries provided with Storage Network Management Analysis cubes are not intended to be modified by customers. If you should intentionally or unintentionally change them, Tivoli Decision Support changes the cube's icon to include a plus sign (+). To restore the default settings, do the following

1. From the Discovery Administrator, right click the cube whose defaults you want to restore.
2. From the submenu that is displayed, select **Restore Default**.
3. A message appears warning that restoring the defaults will delete any changes that you made to the cube. Click **Yes**.

Setting Up Crystal Reports

Do the following procedure only when you access Crystal Reports for the first time in the Tivoli Discovery Interface:

1. Start the Tivoli Discovery Interface. Select the category and topic.
2. Select a Crystal report. (Crystal Reports are designated by the page icon to the left of the report name.)
3. When you open the report, a dialog box is displayed. Enter the name and password for the ODBC driver. Select **Options**.
4. A dialog box is displayed. The names of the data source configured for your system will appear in the DSN dropdown list, so you can pick the one you wish to use. Set the remaining parameters (Qualifier, Database, and DB Type). Click **OK**.

Note: You must have both Disk LUN Management and File Systems Management running in order to see the data in the threshold settings.

Troubleshooting

This section describes troubleshooting tips for the following areas:

- “Solving Cube Building Problems” on page 13.
- “Solving Report Problems” on page 14.

Solving Cube Building Problems

Cube building has the following problems and possible solutions:

- *What do I do when the Tivoli Discovery Administrator message appears:*
 Error building cube.
and the Details information includes:
 Error 91 - Error getting query parameters; object variable or with block variable not set.
 The data sources have not been assigned to the cube queries. Assign the data sources to the queries.
- *During use of the Tivoli Discovery Interface, what does it mean when a Cognos PowerPlay report icon appears with a Cannot Execute indicator (a “ghosted” icon), and a report cannot be opened?*
 The cube is unavailable. Contact the Tivoli Decision Support administrator and request that the cube be built.
- *Why does the Tivoli Discovery Administrator report that a cube could not be built?*
 The cube you are attempting to rebuild is currently in use, and Tivoli Decision Support cannot overwrite this cube with the new cube data. Close all copies of the Tivoli Discovery Interface that are running. Copy the *CubeName.mdc* file from the **TDS 2.1\Cubes\Temp** directory to the **TDS 2.1\cubes** directory, where **TDS 2.1** is the Tivoli Decision Support installation directory.
 The queries returned insufficient data to build a cube. Verify that data is returned by your queries.
- *If all the Tivoli Discovery Interface processes are closed, why doesn't the cube build?*
 A copy of Cognos PowerPlay may still be running in the background. This can also prevent cube builds from succeeding. Open the Task manager. If you find the process *pplay.exe*, end the process and rebuild the cube.
- *Why don't the cubes build automatically overnight?*
 For scheduled cube builds to occur, the Cognos Scheduler must be running. Start Cognos Scheduler. Review the schedule definitions in Cognos Scheduler and the Tivoli Discovery Administrator.
- *Should I change the default threshold parameter?*
 By default, this value matches the value set by Tivoli Storage Network Manager. Contact Customer Support if you want to change this value.
- *What if I get an error from the Tivoli Discovery Administrator in MS SQL related to a string having zero length?*
 If you export a RDBMS to a file and then import again, fields that are designed to be formatted as NULL are reformatted to the empty string (“”). Cubes will build correctly, but some failures will occur that are related to a string having a zero length. The database administrator should format those columns with the following:
 update <tablename> set <columnname> = NULL
 Where <columnname> equals “”

- *What do I do if the following error message appears during a cube build: “Tivoli.TDS_V_FSPolicy is an undefined name”?*
Ensure you have loaded the TDS views. See “Loading DB2 Views Using Command Center” on page 9 for a step by step procedure.

Solving Report Problems

The following problems can occur:

- *What should I do when the error message `load_graph_from_powercube` appears.*
The cube has not been built. Build the cube.
- *I tried to open a report, but the Tivoli Discovery Interface does not progress past the wait cursor.*
The Tivoli Discovery Interface may have lost its connection to the Cognos PowerPlay task. Close the Tivoli Discovery Interface and Cognos PowerPlay. Restart the Tivoli Discovery Interface, and the reports should open.
- *I opened a report, but it contained no data.*
There may be data in the report, but there is no data in the drill-down. The report may be filtered on a dimension. Look at the dimension bar, and check if any of the values, especially the date dimension, are drilled down.
- *The Crystal Reports do not have a left margin.*
The type of printer attached to a workstation influences the alignment of Crystal Reports. Try disconnecting the printer and restarting TDS.
- *I cannot open a Crystal Report using the Tivoli Discovery Interface.*
Ensure that the RDBMS is available to query and that you are using the correct username and password.
- *My .mdb files are reporting unexpected results.*
The Microsoft Access engine is limited to 850MB. If your *drillthru.mdb* exceeds 850MB, contact customer support.

Note: See the *Readme.txt* file for other troubleshooting tips.

Product Details

This section describes some of the details of the Storage Network Management Analysis features and functions, and lists pointers to information supplied on the Tivoli Discovery Interface.

Cubes (Tivoli Discovery Administrator)

A PowerCube contains data (measure values) organized in dimensions and measures to provide for faster retrieval and drill-down in PowerPlay Explorer and Reporter. You can view the cubes in Tivoli Discovery Administrator. Storage Network Management Analysis has two cubes:

- “TSNM Capacity and Utilization Cube” on page 15.
- “TSNM FS Policies Cube” on page 15.

Each cube consists of one or more queries that collect the information from the relational database. The second cube has one parameter.

Each query creates a .csv data file used by the Cognos Transformer to build the powercubes. The queries extract data from the relational database through an ODBC driver. To view the SQL queries, Calculated Columns, and Event Procedures, select a cube from the list in the TDS Administrator console. Then double-click on Queries, and double-click on an individual query title to display the query window and tabbed dialog.

TSNM Capacity and Utilization Cube

The TSNM Capacity and Utilization Administrator cube contains capacity and available space data for physical volumes, logical volumes, and file systems. All data is cross referenced by host to show host resource assignments.

TSNM FS Policies Cube

The TSNM FS Policies cube contains file system utilization thresholds. The threshold parameter is used to define the maximum utilization for file systems.

Parameters Used to Build Cube

Field Name	Type	Default Values
Default	Terminology	90

Note: This value is set to match the Tivoli Storage Network Manager default. Contact Customer Support if you want to change this value.

Topics and Views for Tivoli Network Storage Management Resource Analysis

The Tivoli Network Storage Management Resource Analysis category contains topics dealing with SAN inventory, storage space utilization, and resource monitoring. In this category, Storage Network Management Analysis provides the following topics and views you can see in the Tivoli Discovery Interface.

Capacity and Usage of SAN Resources

Hints: Views in this topic display the total space and occupied space for file systems, logical volumes, and physical volumes.

Table 1: Capacity and Usage of SAN Resources

View Title	Report Filename	Data Source
How much total space is available on storage sub-systems?	TSNM_capacity003.rpt	DB2
What is the capacity and utilization for each file system by host?	TSNM_cap1002.ppr	Capacity and Utilization (cube)
What is the logical volume capacity and utilization for each host?	TSNM_cap1001.ppr	Capacity and Utilization (cube)
What is the physical volume capacity and utilization for each host?	TSNM_cap1003.ppr	Capacity and Utilization (cube)

Inventory of SAN Resources

Hints: This topic contains reports that will be useful when an inventory of SAN resources is required. The reports contain information such as device status, capacity, and availability. The devices are listed by LUN and assigned host.

Table 2: Inventory of SAN Resources

View Title	Report Filename	Data Source
What are the assigned/unassigned storage devices?	TSNM_inventory004.rpt	DB2
What devices are present on the SAN fabric (switches, hubs, etc.)?	TSNM_inventory002.rpt	DB2
What resources are on the SAN?	TSNM_inventory001.rpt	DB2
What storage devices are assigned to a SAN resource?	TSNM_inventory003.rpt	DB2

Monitoring of SAN Resources

Hints: These reports draw attention to parameters that are typically monitored such as threshold capacity, and error status. Threshold capacity is defined for file systems only, but may be specified at the host, host group, or domain levels.

Table 3: Monitoring of SAN Resources

View Title	Report Filename	Data Source
What are the top ten file systems reaching their threshold capacity?	TSNM_fsp1001.ppr	FS Policies (cube)
What file systems are nearing or exceeding threshold capacity?	TSNM_monitoring002.rpt	DB2
What resources are currently in an error state?	TSNM_monitoring003.rpt	DB2

Prerequisite and Related Documents

Refer to the following Tivoli Decision Support documentation when installing and using Storage Network Management Analysis.

Publication	Description	Location
<i>Installation Guide</i>	Describes installing TDS and its components in stand-alone and network mode.	\Docs\PDF
<i>Decision Support User's Guide</i>	Describes TDS features and concepts and provides procedures for using the Tivoli Discovery Interface.	\Docs\PDF
<i>Tivoli Decision Support Release Notes</i>	Provides the most current information about TDS 2.1.	\Docs\PDF
<i>Administrator Guide</i>	Explains the features of the Tivoli Discovery Administrator component.	\Docs\PDF

Software Defects, Limitations, and Workarounds

This section lists the current defects, limitations and workarounds known for this product.

Defects

Currently, no known defects are reported for the Storage Network Management Analysis.

Limitations

Currently, no known limitations are reported for the Storage Network Management Analysis.

Workarounds

This section lists workarounds for the following problems:

Problem	Workaround
Measures on simple bar graphs appear twice: centered on the graph and over the Y-axis. On low resolution monitors, the measure names may overlap.	A minimum resolution of 800x600 pixels is recommended for monitors.

Contacting Customer Support

If you have difficulties with any Tivoli products, access the Tivoli Customer Support home page at <http://www.support.tivoli.com>. After you link to and submit the customer registration form, you can access many customer support services on the World Wide Web. At that Web site, you can also get the Customer Support Handbook.

You can e-mail Customer Support at support@tivoli.com.

Use the following phone numbers to contact customer support at the Tivoli Customer Call Center in the United States:

- Tivoli: 1-800-TIVOLI8
- IBM: 1-800-237-5511 (after reaching this number, press selection 6 then selection 8 to connect to Tivoli Customer Call Center)

We at Tivoli are very interested in hearing from you about your experience with Tivoli products, documentation, and services. We welcome your suggestions for improvements. If you have comments or suggestions about this documentation, please send e-mail to pubs@tivoli.com.