

Tivoli Storage Manager
for Windows
Version 6.2

Installation Guide



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Note:

Before using this information and the product it supports, read the information in “Notices” on page 95.

| This edition applies to Version 6.2 of IBM Tivoli Storage Manager (product number 5608-E01, 5608-E02, 5608-E03,
| 5608-E07, 5608-E12) and to all subsequent releases and modifications until otherwise indicated in new editions or
| technical newsletters. This edition replaces GC23-9785-01.

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Contents

Preface	v	Chapter 4. Installing the reporting and monitoring feature.	35
Who should read this guide	v	Planning to install the Tivoli Storage Manager reporting and monitoring feature	35
Publications	v	System requirements for Tivoli Storage Manager reporting and monitoring.	38
Tivoli Storage Manager publications	vi	Work sheet for installation information	40
Support information	vii	Installing the Tivoli Storage Manager reporting and monitoring feature using the installation wizard	41
Getting technical training	vii	Taking the first steps after you install the Tivoli Storage Manager reporting and monitoring feature	43
Searching knowledge bases	vii	Configuring the Tivoli Enterprise Portal server	44
Contacting IBM Software Support	ix	Configuring Tivoli Data Warehouse	45
New for IBM Tivoli Storage Manager Version 6.2.	xiii	Configuring and activating the Warehouse Summarization and Pruning agent.	45
Chapter 1. Planning to install IBM Tivoli Storage Manager	1	Configuring historical data collection using the Tivoli Enterprise Portal	47
What you should know first	1	Installing a reporting and monitoring agent	48
Installable components	2	Installing a reporting and monitoring agent on a Tivoli Storage Manager server	49
System requirements.	4	Installing a reporting and monitoring agent on an existing IBM Tivoli Monitoring server	49
Capacity planning	6	Creating and configuring the reporting and monitoring agent instance	51
Estimating database space requirements	6	Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal	52
Recovery log space requirements	8	Installing software for custom reporting	53
Work sheet for planning space for the Tivoli Storage Manager server.	9	Uninstalling the Tivoli Storage Manager reporting and monitoring feature	53
Server naming best practices	9	Uninstalling the Tivoli Storage Manager reporting and monitoring feature	53
Chapter 2. Installing Tivoli Storage Manager	11	Chapter 5. Installing and configuring the Administration Center	55
Installing Tivoli Storage Manager using the installation wizard	12	Administration Center system requirements	55
Installing Tivoli Storage Manager using the console installation wizard	13	Installing the Administration Center	56
Installing Tivoli Storage Manager in silent mode	13	Installing the Administration Center using the installation wizard	56
Installing silently using a batch script	15	Installing the Administration Center using the console installation wizard	57
Server language locales	15	Installing the Administration Center in silent mode	58
Installing a language package	16	Verifying your installation	60
Chapter 3. Taking the first steps after you install Tivoli Storage Manager	17	Starting and stopping the Tivoli Integrated Portal server	61
Creating the directories and the user ID for the server instance	18	Defining Administration Center users to the Tivoli Integrated Portal.	62
Configuring Tivoli Storage Manager	19	Uninstalling the Administration Center	62
Configuring Tivoli Storage Manager using the configuration wizard	20	Chapter 6. Upgrading from Tivoli Storage Manager Version 6.1	65
Configuring the server instance using the Management Console	21	Upgrading Tivoli Storage Manager using the installation wizard	67
Configuring the server instance manually	23		
Starting the server instance	29		
Starting the server using Windows services.	29		
Stopping the server.	31		
Registering licenses.	31		
Preparing the system for database backups.	31		
Running multiple server instances on a single system	32		
Monitoring the server	32		

Upgrading Tivoli Storage Manager using the console installation wizard	68
Upgrading Tivoli Storage Manager in silent mode	69
Upgrading silently using a batch script	70
Using Remote Execution Protocol on Windows Vista and Windows Server 2008	70

Chapter 7. Upgrading the reporting and monitoring feature to Version 6.2 73

Upgrading the reporting and monitoring feature to version 6.2 using the installation wizard.	73
--	----

Chapter 8. Upgrading the Administration Center 75

Overview of upgrade and coexistence	75
Upgrading procedure for the Administration Center	76
Obtaining information about Tivoli Integrated Portal or Integrated Solutions Console users.	77
Defining Integrated Solutions Console users to the Version 6.2 Administration Center	77
Server connections to the Administration Center	78

Chapter 9. Installing a Tivoli Storage Manager server fix pack 81

Chapter 10. Uninstalling Tivoli Storage Manager 83

Uninstalling and reinstalling Tivoli Storage Manager	84
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| Appendix A. Installation log files 87

Appendix B. Services associated with the Tivoli Storage Manager server 91

Appendix C. Accessibility features for Tivoli Storage Manager. 93

Notices 95

Trademarks	97
----------------------	----

Glossary 99

Index 101

Preface

This publication contains installation and configuration instructions for the Tivoli® Storage Manager server and client API, server languages, and other Tivoli Storage Manager components.

Instructions for installing the Tivoli Storage Manager license, device driver, storage agent, the Tivoli Integrated Portal and Administration Center, and the reporting and monitoring feature are also included in this publication.

Who should read this guide

This publication is intended for a system administrator installing and configuring Tivoli Storage Manager Version 6.2.

If you are upgrading an existing 5.5.x Tivoli Storage Manager server to Tivoli Storage Manager Version 6.2, see the *Server Upgrade Guide*.

If you are upgrading a Tivoli Storage Manager Version 6.1.x server to Version 6.2, see Chapter 6, “Upgrading from Tivoli Storage Manager Version 6.1,” on page 65.

If you are upgrading an existing Tivoli Storage Manager Version 6.2 server to a later level of Version 6.2, see Chapter 9, “Installing a Tivoli Storage Manager server fix pack,” on page 81.

Publications

IBM® Tivoli Storage Manager publications and other related publications are available online.

You can search all publications in the Tivoli Storage Manager Information Center: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6r2>.

You can download PDF versions of publications from the Tivoli Storage Manager Information Center or from the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

Go to Tivoli Documentation Central to find information centers that contain official product documentation for current and previous versions of Tivoli products, including Tivoli Storage Manager products at <http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Tivoli+Storage+Manager>.

You can also order some related publications from the IBM Publications Center Web site. The Web site provides information about ordering publications from countries other than the United States. In the United States, you can order publications by calling 1-800-879-2755.

Tivoli Storage Manager publications

Publications are available for the server, storage agent, client, and Data Protection.

Table 1. IBM Tivoli Storage Manager troubleshooting and tuning publications

Publication title	Order number
<i>IBM Tivoli Storage Manager Client Messages and Application Programming Interface Return Codes</i>	SC27-2877
<i>IBM Tivoli Storage Manager Server Messages and Error Codes</i>	SC27-2878
<i>IBM Tivoli Storage Manager Performance Tuning Guide</i>	GC23-9788
<i>IBM Tivoli Storage Manager Problem Determination Guide</i>	GC23-9789

Table 2. Tivoli Storage Manager server publications

Publication title	Order number
<i>IBM Tivoli Storage Manager for AIX® Installation Guide</i>	GC23-9781
<i>IBM Tivoli Storage Manager for AIX Administrator's Guide</i>	SC23-9769
<i>IBM Tivoli Storage Manager for AIX Administrator's Reference</i>	SC23-9775
<i>IBM Tivoli Storage Manager for HP-UX Installation Guide</i>	GC23-9782
<i>IBM Tivoli Storage Manager for HP-UX Administrator's Guide</i>	SC23-9770
<i>IBM Tivoli Storage Manager for HP-UX Administrator's Reference</i>	SC23-9776
<i>IBM Tivoli Storage Manager for Linux Installation Guide</i>	GC23-9783
<i>IBM Tivoli Storage Manager for Linux Administrator's Guide</i>	SC23-9771
<i>IBM Tivoli Storage Manager for Linux Administrator's Reference</i>	SC23-9777
<i>IBM Tivoli Storage Manager for Sun Solaris Installation Guide</i>	GC23-9784
<i>IBM Tivoli Storage Manager for Sun Solaris Administrator's Guide</i>	SC23-9772
<i>IBM Tivoli Storage Manager for Sun Solaris Administrator's Reference</i>	SC23-9778
<i>IBM Tivoli Storage Manager for Windows Installation Guide</i>	GC23-9785
<i>IBM Tivoli Storage Manager for Windows Administrator's Guide</i>	SC23-9773
<i>IBM Tivoli Storage Manager for Windows Administrator's Reference</i>	SC23-9779
<i>IBM Tivoli Storage Manager Server Upgrade Guide</i>	SC23-9554
<i>IBM Tivoli Storage Manager Integration Guide for Tivoli Storage Manager FastBack</i>	SC27-2828

Table 3. Tivoli Storage Manager storage agent publications

Publication title	Order number
<i>IBM Tivoli Storage Manager for SAN for AIX Storage Agent User's Guide</i>	SC23-9797
<i>IBM Tivoli Storage Manager for SAN for HP-UX Storage Agent User's Guide</i>	SC23-9798
<i>IBM Tivoli Storage Manager for SAN for Linux Storage Agent User's Guide</i>	SC23-9799
<i>IBM Tivoli Storage Manager for SAN for Sun Solaris Storage Agent User's Guide</i>	SC23-9800
<i>IBM Tivoli Storage Manager for SAN for Windows Storage Agent User's Guide</i>	SC23-9553

Table 4. Tivoli Storage Manager client publications

Publication title	Order number
IBM Tivoli Storage Manager for UNIX and Linux: Backup-Archive Clients Installation and User's Guide	SC23-9791
IBM Tivoli Storage Manager for Windows: Backup-Archive Clients Installation and User's Guide	SC23-9792
IBM Tivoli Storage Manager for Space Management for UNIX and Linux: User's Guide	SC23-9794
IBM Tivoli Storage Manager Using the Application Programming Interface	SC23-9793

Table 5. Tivoli Storage Manager Data Protection publications

Publication title	Order number
IBM Tivoli Storage Manager for Enterprise Resource Planning: Data Protection for SAP Installation and User's Guide for DB2	SC33-6341
IBM Tivoli Storage Manager for Enterprise Resource Planning: Data Protection for SAP Installation and User's Guide for Oracle	SC33-6340

Support information

You can find support information for IBM products from various sources.

Start at the IBM Support Portal: <http://www.ibm.com/support/entry/portal/>. You can select the products that you are interested in, and search for a wide variety of relevant information.

Getting technical training

Information about Tivoli technical training courses is available online.

Go to these Web sites for training information:

Tivoli software training and certification

Choose from instructor led, online classroom training, self-paced Web classes, Tivoli certification preparation, and other training options at this site: <http://www.ibm.com/software/tivoli/education/>

Tivoli Support Technical Exchange

Technical experts share their knowledge and answer your questions in these webcasts: http://www.ibm.com/software/sysmgmt/products/support/supp_tech_exch.html

Searching knowledge bases

If you have a problem with IBM Tivoli Storage Manager, there are several knowledge bases that you can search.

Begin by searching the Tivoli Storage Manager Information Center at <http://publib.boulder.ibm.com/infocenter/tsminfo/v6r2>. From this Web site, you can search the current Tivoli Storage Manager documentation.

Searching the Internet

If you cannot find an answer to your question in the Tivoli Storage Manager Information Center, search the Internet for the information that might help you resolve your problem.

To search multiple Internet resources, go to the support Web site for Tivoli Storage Manager at http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager.

You can search for information without signing in. Sign in using your IBM ID and password, if you want to customize the site based on your product usage and information needs. If you do not already have an IBM ID and password, click **Sign in** at the top of the page and follow the instructions to register.

From the Support Web site, you can search various resources including:

- IBM technotes
- IBM downloads
- IBM Redbooks® publications
- IBM Authorized Program Analysis Reports (APARs)

Select the product and click **Downloads** to search the APAR list.

If you still cannot find a solution to the problem, you can search forums and newsgroups on the Internet for the latest information that might help you resolve your problem.

An independent user discussion list, ADSM-L, is hosted by Marist College. You can subscribe by sending an e-mail to listserv@vm.marist.edu. The body of the message must contain the following text: SUBSCRIBE ADSM-L *your_first_name your_family_name*.

To share your experiences and learn from others in the Tivoli Storage Manager user community, go to the Tivoli Storage Manager wiki at <http://www.ibm.com/developerworks/wikis/display/tivolistoragemanager>.

Using IBM Support Assistant

IBM Support Assistant is a complimentary software product that helps you with problem determination. You can install the stand-alone IBM Support Assistant application on any workstation. You can then enhance the application by installing product-specific plug-in modules for the IBM products that you use.

IBM Support Assistant helps you gather support information when you need to open a problem management record (PMR), which you can then use to track the problem. For more information, see the IBM Support Assistant Web site at <http://www.ibm.com/software/support/isa/>.

The product-specific plug-in modules provide you with the following resources:

- Support links
- Education links
- Ability to submit problem management reports

Find add-ons for specific products here: <http://www.ibm.com/support/docview.wss?&uid=swg27012689>.

Finding product fixes

A product fix to resolve your problem might be available from the IBM Software Support Web site.

You can determine what fixes are available by checking the IBM Software Support Web site at <http://www.ibm.com/support/entry/portal/>.

- If you previously customized the site based on your product usage:
 1. Click the link for your Tivoli Storage Manager product, or one of the other Tivoli Storage Manager components that you want to find a fix for.
 2. Click **Downloads**, and then click **Fixes by version**.
- If you have not customized the site based on your product usage, click **Downloads** and search for your product.

Receiving notification of product fixes

You can receive notifications about fixes, flashes, upgrades, and other news about IBM products.

To sign up to receive notifications about IBM products, follow these steps:

1. From the support page at <http://www.ibm.com/support/entry/portal/>, click **My notifications** in the notifications module.
2. Sign in using your IBM ID and password. If you do not have an ID and password, click **register now** above the IBM ID and password.
3. Click the **Subscribe** tab to select your product family and click **Continue**.
4. Select the type of information that you want to receive, and add your personal preferences. You can specify how you want to be notified, how often, and you can also optionally select a folder for the notifications.
5. Click **Submit**.
6. For notifications for other products, repeat steps 4 and 5.

Tip: You can also pick a product first, from the main support portal site, and then click in the **Notifications** section to create or update your subscription for that product.

Contacting IBM Software Support

You can contact IBM Software Support if you have an active IBM subscription and support contract and if you are authorized to submit problems to IBM.

Before you contact IBM Software Support, follow these steps:

1. Set up a subscription and support contract.
2. Determine the business impact of your problem.
3. Describe your problem and gather background information.

Then see “Submitting the problem to IBM Software Support” on page xi for information on contacting IBM Software Support.

Setting up a subscription and support contract

Set up a subscription and support contract. The type of contract that you need depends on the type of product you have.

For IBM distributed software products (including, but not limited to, IBM Tivoli, Lotus®, and Rational® products, as well as IBM DB2® and IBM WebSphere® products that run on Microsoft® Windows® or UNIX® operating systems), enroll in IBM Passport Advantage® in one of the following ways:

- **Online:** Go to the Passport Advantage Web page at <http://www.ibm.com/software/lotus/passportadvantage/>, click **How to enroll**, and follow the instructions.
- **By Phone:** You can call 1-800-IBMSERV (1-800-426-7378) in the United States, or for the phone number to call in your country, go to the IBM Software Support Handbook Web page at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html> and click **Contacts**.

Determining the business impact

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you must understand and assess the business impact of the problem you are reporting.

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

Describing the problem and gather background information

When explaining a problem to IBM, it is helpful to be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently.

To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be recreated? If so, what steps led to the failure?
- Have any changes been made to the system? For example, hardware, operating system, networking software, and so on.
- Are you using a workaround for this problem? If so, be prepared to explain it when you report the problem.

Submitting the problem to IBM Software Support

You can submit the problem to IBM Software Support online or by phone.

Online

Go to the IBM Software Support Web site at [http://www.ibm.com/support/entry/portal/Open_service_request/Software/Software_support_\(general\)](http://www.ibm.com/support/entry/portal/Open_service_request/Software/Software_support_(general)). Sign in to access IBM Service Requests, and enter your information into the problem submission tool.

By phone

For the phone number to call in your country, go to the contacts page of the IBM Software Support Handbook at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>.

New for IBM Tivoli Storage Manager Version 6.2

This section summarizes changes that have been made to IBM Tivoli Storage Manager Version 6.2 that affect the Tivoli Storage Manager server, the Administration Center, and the reporting and monitoring feature installation and upgrade from Version 6.1. Any updates that have been made to the information since the previous edition are marked with a vertical bar (|) in the left margin.

The following features are new for Tivoli Storage Manager in Version 6.2:

DB2 version

IBM DB2 Version 9.7 is installed during the installation of a Tivoli Storage Manager Version 6.2 server.

Tivoli Storage Manager reporting and monitoring feature

The Tivoli Storage Manager reporting and monitoring feature has been integrated into a new user interface called the Tivoli Integrated Portal.

The Tivoli Integrated Portal provides all the functions that were available in the Integrated Solutions Console, but with a new look-and-feel. The Administration Center moved from the Integrated Solutions Console to the Tivoli Integrated Portal. This move affects the reporting and monitoring reports that are run from the Administration Center.

Tivoli Integrated Portal

The Tivoli Integrated Portal is a new graphical user interface (GUI) that you can install to work with the Tivoli Storage Manager Version 6.2 server. Tivoli Integrated Portal provides all the functions that were available in the Integrated Solutions Console. The Administration Center, Common Reporting, and other applications are integrated into this new user interface. Pre-Version 6.2 Tivoli Storage Manager servers using the Version 6.2 Administration Center cannot support the Version 6.2 features. See Chapter 5, “Installing and configuring the Administration Center,” on page 55 to install and configure the Administration Center, or Chapter 8, “Upgrading the Administration Center,” on page 75 to upgrade the Administration Center.

Chapter 1. Planning to install IBM Tivoli Storage Manager

Install the Tivoli Storage Manager server component on the computer that manages storage devices and the Tivoli Storage Manager client code on every workstation that will transfer data to Tivoli Storage Manager server-managed storage.

Tivoli Storage Manager server maintenance releases, client software, and publications are available from the Tivoli Storage Manager Web site at http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager.

What you should know first

Before installing IBM Tivoli Storage Manager for the first time, be familiar with your operating systems, storage devices, communication protocols, and system configurations.

If you are upgrading an existing 5.5.x Tivoli Storage Manager server to Tivoli Storage Manager Version 6.2, see the *Server Upgrade Guide*.

If you are upgrading a Tivoli Storage Manager Version 6.1.x server to Version 6.2, see Chapter 6, “Upgrading from Tivoli Storage Manager Version 6.1,” on page 65.

If you are upgrading an existing Tivoli Storage Manager Version 6.2 server to a later level of Version 6.2, see Chapter 9, “Installing a Tivoli Storage Manager server fix pack,” on page 81.

Before you install IBM Tivoli Storage Manager for the first time, familiarize yourself with the following items:

- The Windows operating system that is running on the Tivoli Storage Manager server workstation.
- The operating systems that are running on any Tivoli Storage Manager client workstations.
- Storage devices that will be available to Tivoli Storage Manager.
- Communication protocols that are installed on your clients and servers.
- Any special system configurations you plan to use, such as Microsoft Active Directory, Microsoft Cluster Server (MSCS), or Microsoft Failover Clusters.

Restriction: You cannot install and run the Version 6.2 server on a system that already has DB2 installed on it, whether DB2 was installed by itself or as part of some other application. The Version 6.2 server requires the installation and use of the DB2 version that is packaged with the Version 6.2 server. No other version of DB2 can exist on the system.

Users who are experienced DB2 administrators can choose to perform advanced SQL queries and use DB2 tools to monitor the database. However, do *not* use DB2 tools to change DB2 configuration settings from those that are preset by Tivoli Storage Manager, or alter the DB2 environment for Tivoli Storage Manager in other ways, such as with other products. The Tivoli Storage Manager Version 6.2 server has been built and tested extensively using the data definition language (DDL) and database configuration that Tivoli Storage Manager deploys.

Installable components

The IBM Tivoli Storage Manager server, client API, and licenses are required components. Other, optional components and products are also available with Tivoli Storage Manager.

You can install the following components for Tivoli Storage Manager 6.2:

- Tivoli Storage Manager server
- Tivoli Storage Manager server languages
- Tivoli Storage Manager licenses
- Tivoli Storage Manager devices
- Tivoli Storage Manager storage agent
- Tivoli Storage Manager Administration Center
- Tivoli Storage Manager reporting and monitoring

Table 6 describes all the installable components.

Table 6. Tivoli Storage Manager installable components

Tivoli Storage Manager component:	Description:	Additional information:
Server (required)	Includes the Tivoli Storage Manager database, management console, client API, GSKit, and tools to help you configure and manage Tivoli Storage Manager.	Refer to the Tivoli Storage Manager server overview in the <i>Administrator's Guide</i> .
Language pack (optional)	Each language pack (one for each language) contains language-specific information for the server and the management console.	See "Server language locales" on page 15.
Licenses (required)	Includes support for all Tivoli Storage Manager licensed features. After you install this package, you must configure the licenses you have purchased.	Refer to the chapter on managing server operations in the <i>Administrator's Guide</i> .

Table 6. Tivoli Storage Manager installable components (continued)

Tivoli Storage Manager component:	Description:	Additional information:
Devices (optional)	Extends Tivoli Storage Manager media management capability.	<p>The Tivoli Storage Manager device driver is preferred for use with the Tivoli Storage Manager server.</p> <p>The device driver is required for use with automated library devices and optical disk devices, unless you are using Windows Removable Storage Manager to manage media. The device driver is not installed by default when the Tivoli Storage Manager devices component is selected. You must select Yes on the device window to install the Tivoli Storage Manager device driver.</p> <p>Refer to the chapter on adding devices in the <i>Administrator's Guide</i>.</p> <p>A list of devices supported by this driver is available from the Tivoli Storage Manager Web site, at http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager.</p>
Storage agent (optional)	<p>Installs the component that allows client systems to write data directly to, or read data directly from, storage devices that are attached to a storage area network (SAN). To install a Version 6 storage agent, use the packages located in the server directory.</p> <p>Remember: The IBM Tivoli Storage Manager for Storage Area Networks is a separately licensed product.</p>	Refer to the <i>Storage Agent User's Guide</i> .
Administration Center (optional)	<p>Installs the following components automatically to help you configure and manage Tivoli Storage Manager:</p> <ul style="list-style-type: none"> • Tivoli Integrated Portal • Integrated Solutions Console • WebSphere Application Server • Tivoli Common Reporting • Time scheduling services • IBM HTTP Server • Common Gateway Interface server <p>Optional components are also available.</p> <p>Remember: The Administration Center is on a separate DVD.</p>	Refer to "Administration Center system requirements" on page 55.

Table 6. Tivoli Storage Manager installable components (continued)

Tivoli Storage Manager component:	Description:	Additional information:
Reporting and monitoring feature (optional)	Provides reports and real time monitoring information about Tivoli Storage Manager servers and client activity. Remember: This feature is on a separate DVD.	Refer to Chapter 4, “Installing the reporting and monitoring feature,” on page 35.

System requirements

The Tivoli Storage Manager server can require a large amount of memory, network bandwidth, and processor resources. In many cases, the server performs best when other applications are not installed on the same system.

Hardware requirements

Table 7 describes the minimum hardware requirements needed for your Windows system. For more details about planning disk space, see “Capacity planning” on page 6.

Table 7. Hardware requirements

Type of hardware	Hardware requirements
Hardware	Intel® Pentium® compatible processor or multiprocessor-based computer
Disk Space	<ul style="list-style-type: none"> At least 3 GB of free disk storage (for a typical installation) 200 MB temporary directory space 2 GB partition size in the C:\ drive 300 MB in the instance directory <p>Significant additional disk space is required for database and log files. The size of the database depends on the number of client files to be stored and the method by which the server manages them. The default active log space is 16 GB, the minimum that is needed for most workloads and configurations. Allocate at least three times the active log space for the archive log (48 GB). Ensure that you have sufficient resources if you are using deduplication or expect a heavy client workload.</p> <p>For optimal performance and to facilitate I/O, specify at least four separate directories or Logical Unit Numbers (LUNs) to be used by the database and logs. This allows I/O to be balanced across multiple directories or mounts.</p>

Table 7. Hardware requirements (continued)

Type of hardware	Hardware requirements
Memory	<p>64-bit Windows systems (recommended)</p> <ul style="list-style-type: none"> • 12 GB. • 16 GB if you are using deduplication. • If you plan to run multiple instances, each instance requires the memory listed for one server. Multiply the memory for one server by the number of instances planned for the system. <p>32-bit Windows systems</p> <ul style="list-style-type: none"> • 8 GB. • Deduplication is not supported. • Running more than one server instance on a system is not supported. • Might not be appropriate for all workloads because of real memory limitations, for example, hundreds of clients assigned to one server. Or, fewer clients with a heavier data workload (hundreds of gigabytes or greater than one terabyte per 24-hour backup cycle).

Software requirements

Table 8 describes the minimum software requirements needed for your Windows system.

Table 8. Software requirements

Type of software	Minimum software requirements
Operating System	<p>One of the following operating systems, however, some functionality is not available on the 32-bit systems. Check the system memory requirements for more details.</p> <ul style="list-style-type: none"> • Microsoft Windows Server 2003: Standard, Enterprise, or Datacenter Edition, Service Pack 2 or later • Microsoft Windows Server 2003: Standard, Enterprise or Datacenter x64 Edition (64-bit), Service Pack 2 or later • Microsoft Windows Storage Server 2003 • Microsoft Windows Storage Server 2003 x64 • Microsoft Windows Server 2008: Standard, Enterprise, or Datacenter Edition • Microsoft Windows Server 2008: Standard, Enterprise, or Datacenter x64 Edition (64-bit) • Microsoft Windows Server 2008 R2: Standard, Enterprise, or Datacenter Edition
Communication protocol	<p>At least one of the following communication protocols (installed by default with the current Windows operating systems):</p> <ul style="list-style-type: none"> • Named Pipes • TCP/IP Version 4 or Version 6

Table 8. Software requirements (continued)

Type of software	Minimum software requirements
Web browser	<p>A Web browser to log in and use the console. The Web browser can be installed on the same or a separate system. The following browsers are supported:</p> <ul style="list-style-type: none"> • Microsoft Internet Explorer 6.0 SP1 • Microsoft Internet Explorer 7.0 • Firefox 2.0 or later • Mozilla 1.7.8 <p>Your browser must support the server code page. If your browser does not support the server code page, the windows might be unreadable. If your browser meets these requirements but does not correctly display a Tivoli Storage Manager Web-based interface, consider trying a different browser.</p>
System functions	<p>The Windows system functions, such as Device Manager, are supported on the 64-bit Tivoli Storage Manager Console.</p> <p>Normal Windows system functions are available for both the 32-bit and 64-bit server using the Manage Computer function of the Windows system.</p>

Capacity planning

Planning for Tivoli Storage Manager includes determining the number of client nodes to be managed by the Tivoli Storage Manager server, the backup and recovery needs of those clients, and the number and general size of client data files.

Estimating database space requirements

The size of the database depends on the number of client files to be stored and the method by which the server manages them.

If you can estimate the maximum number of files that might be in server storage at any time, you can estimate the database size from the following information:

- Each stored version of a file requires about 600 - 1000 bytes of database space.
- Each cached file, copy storage pool file, and active-data pool file, and deduplicated file requires about an additional 100 - 200 bytes of database space.
- Overhead can require up to 50% in additional space.

In the following example for a single client, the computations are probable maximums. In addition, the numbers are not based on using file aggregation. In general, aggregation of small files reduces the required database space. Assume the following numbers for a Tivoli Storage Manager system:

Versions of files

Backed up files

Up to 500,000 client files might be backed up. Storage policies call for keeping up to three copies of backed up files:

500,000 files x 3 copies = 1,500,000 files

Archived files

Up to 100,000 files might be archived copies of client files.

Space-managed files

Up to 200,000 files migrated from client workstations might be in server storage.

Note: File aggregation does not affect space-managed files.

At 1000 bytes per file, the space required for these files is:

$$(1\,500,000 + 100,000 + 200,000) \times 1000 = 1.8\text{GB}$$

Cached, copy storage pool, active-data pool files, and deduplicated files

Cached copies

Caching is enabled in a 5 GB disk storage pool. The high and low migration thresholds of the pool are 90% and 70%. Thus, 20% of the disk pool, or 1 GB, is occupied by cached files.

If the average file size is about 10 KB, about 100,000 files are in cache at any one time.

$$100,000 \text{ files} \times 200 \text{ bytes} = 19\text{MB}$$

Copy storage pool files

All primary storage pools are backed up to the copy storage pool:

$$(1,500,000 + 100,000 + 200,000) \times 200 \text{ bytes} = 343\text{MB}$$

Active-data pool files

All the active client-backup data in primary storage pools is copied to the active-data pool. Assume that 500,000 versions of the 1 500 000 backup files in the primary storage pool are active.

$$500,000 \times 200 \text{ bytes} = 95 \text{ MB}$$

Deduplicated files

Assume that a deduplicated storage pool contains 50,000 files.

$$50,000 \times 200 \text{ bytes} = 10 \text{ MB}$$

Therefore, cached files, copy storage pool files, and active-data pool files, and deduplicated storage pool files require about an additional 0.5 GB of database space.

Overhead

About 2.3 GB is required for file versions, cached copies, copy storage pool files, and active-data pool files. Allow up to 50% additional space (or 1.2 GB) for overhead.

The database should then have at least 3.5 GB per client.

During SQL queries of the server, intermediate results are stored in temporary tables that require space in the free portion of the database. Therefore, using SQL queries requires additional database space. The more complicated the queries, the greater the space that is required.

Tip:

- In the preceding examples, the results are estimates. The actual size of the database might differ from the estimate because of factors such as the number of directories and the length of the path and file names. As a best practice, periodically monitor your database and adjust its size as necessary.
- If you cannot estimate the numbers of files, you can roughly estimate the database size as from 1% to 5% of the required server storage space. For example, if you need 100 GB of server storage, your database should be 1 - 5 GB.

Recovery log space requirements

The recovery log space that you require depends on the amount of client activity with the server.

Active log space

Ensuring that the recovery log has enough space is essential for a V6.2 server.

The default size of the active log is 16,384 MB (16 GB). Under normal server operations, you are likely to need an active log that is larger than the default. The maximum size of the active log is 131,072 MB (128 GB). The minimum size of the active log is 2048 MB (2 GB).

When estimating the size of the active log, ensure that the active log is large enough to handle not only the amount of concurrent activity that the server typically handles, but also higher workloads that can occur occasionally or under unusual conditions. Try to anticipate the greatest amount of workload that the server might need to handle.

For simple backup and archive activity with no data deduplication, 20 GB for the active log is adequate. If you use data deduplication, and if you deduplicate large objects (for example, image backups), use an active log size that is 20% of the database size.

Monitor the space usage and adjust the size of the active log as needed. To change the size of the active log, see the *Administrator's Guide* and search for increasing the active log size.

Active log mirror space

The active log mirror is a copy of the active log that can be used if the active log files cannot be read. There can be only one active log mirror.

Creating a log mirror is optional. If you increase the size of the active log, the log mirror size is increased automatically. Be aware that mirroring the log can affect performance because of the doubled I/O activity that is required to maintain the mirror. The additional space that the log mirror requires is another factor to consider when deciding whether to create a log mirror.

Archive log space

The size of the archive log depends on the number of objects stored by client nodes between full backups of the database.

To recover space, a full backup of the database causes obsolete archive log files to be pruned. The archive log files that are included in a backup are automatically pruned on a full database backup cycle. Therefore, the archive log must be large enough to contain the logs generated since the previous two full backups.

If you perform a full backup of the database every day, the archive log must be large enough to hold the log files for client activity that occurs over two days. Typically 600 - 4000 bytes of log space are used when an object is stored in the server. Therefore you can estimate a starting size for the archive log using the following calculation:

objects stored per day x 3000 bytes per object x 2 days

For example:

5,000,000 objects/day x 3000 bytes/object x 2 days = 30,000,000,000 bytes,
or 30 GB

It is important to maintain adequate space for the archive log directory. If the drive or file system where the archive log directory is located becomes full and there is no archive failover log directory, the data remains in the active log directory. This condition can cause the active log to fill up, which causes the server to stop.

Archive failover log space

The archive failover log is used by the server if the archive log directory runs out of space.

Specifying an archive failover log directory can prevent problems that occur if the archive log runs out of space. If both the archive log directory and the drive or file system where the archive failover log directory is located become full, the data remains in the active log directory. This condition can cause the active log to fill up, which causes the server to halt.

Work sheet for planning space for the Tivoli Storage Manager server

You can use the work sheet to help you plan the amount and location of storage needed for the Tivoli Storage Manager server.

Item	Space required	Location
The <i>instance directory</i> for the server, which is a directory that contains files specifically for this server instance (the server options file and other server-specific files)		
The database		
Active log		
Archive log		
Optional: Log mirror for the active log		
Optional: Secondary archive log (failover location for archive log)		

Server naming best practices

Coordinating the names for the different items associated with a server instance can make your life easier.

Instance user ID

The instance user ID is used as the basis for other names related to the server instance. The instance user ID is also called the instance owner.

For example: tsminst1

The instance user ID is the user ID that must have ownership or read/write access authority to all directories that you create for the database and the recovery log. If you run the server under the instance user ID, that user ID must also have read/write access to the directories that are used for any **FILE** device classes.

Database instance name

The database instance name is the name of the server instance as it appears in the registry.

For example: Server1

Instance directory

The instance directory can have any name that you want. For easier identification, use a name that ties the directory to the instance name.

You can use a name that includes the name of the server instance as it appears (or will appear) in the registry. Default server instance names have the form Serverx.

For example: d:\tsm\server1

Database name

The database name is always TSMDB1, for every server instance. This name cannot be changed.

Server name

The server name is an internal name for Tivoli Storage Manager, and is used for operations that involve communication among multiple Tivoli Storage Manager servers. Examples include server-to-server communication and library sharing.

The server name is also used when you add the server to the Administration Center so that it can be managed using that interface.

Use a unique name for each server. For easy identification in the Administration Center (or from a QUERY SERVER command), use a name that reflects the location or purpose of the server.

If you use the wizard, the default name that is suggested is the host name of the system that you are using. You can use a different name that is meaningful in your environment. If you have more than one server on the system and you use the wizard, you can use the default name for only one of the servers. You must enter a unique name for each server.

For example:

```
TUCSON_SERVER1  
TUCSON_SERVER2
```

For more information about server names, see *Tivoli Storage Manager Administrator's Guide*.

Directories for database space and recovery log

The directories can be named according to local practices. For easier identification, consider using names that tie the directories to the server instance.

For example, for the archive log:

```
f:\server1\archlog
```

Chapter 2. Installing Tivoli Storage Manager

To install Tivoli Storage Manager 6.2, you can use the graphical installation wizard, the console wizard, or the command line in silent mode.

Using the Tivoli Storage Manager installation software, you can install the following components:

- Tivoli Storage Manager Server

Tip: The Tivoli Storage Manager client application programming interface (API) and GSKit are automatically installed when you select the server component.

- Tivoli Storage Manager Server Languages
- Tivoli Storage Manager License
- Tivoli Storage Manager Devices
- Tivoli Storage Manager Storage Agent

1. If you are installing the products using the Tivoli Storage Manager DVD, complete the following steps:

Log on as an administrator. Insert the Tivoli Storage Manager server DVD. Use Windows Explorer to go to the DVD drive, double-click the DVD, and then double-click install.exe. To access Windows Explorer, go to **Start → Programs → Accessories** or right-click the Start button. The Tivoli Storage Manager server DVD browser window opens.

2. If you downloaded the program from Passport Advantage as an executable file, complete the following steps.

- a. Verify that you have enough space to store the installation files when they are extracted from the product package. See the download document for the space requirements:

Tivoli Storage Manager: <http://www.ibm.com/support/docview.wss?uid=swg24025642>

Tivoli Storage Manager Extended Edition: <http://www.ibm.com/support/docview.wss?uid=swg24025643>

System Storage™ Archive Manager: <http://www.ibm.com/support/docview.wss?uid=swg24025644>

- b. Change to the directory where you placed the executable file.

Tip: In the next step, the files are extracted to the current directory. Ensure that the executable file is in the directory where you want the extracted files to be located.

- c. Either double-click the executable file, or enter the following command on the command line to extract the installation files. The files are extracted to the current directory.

package_name.exe

The *package_name* is typically a name such as CZ1N9ML. The package is large, so the extraction takes some time.

3. Select one of the following ways of installing Tivoli Storage Manager:

Installation wizard

“Installing Tivoli Storage Manager using the installation wizard”

Command-line console wizard

“Installing Tivoli Storage Manager using the console installation wizard” on page 13

Silent mode

“Installing Tivoli Storage Manager in silent mode” on page 13

4. After you install Tivoli Storage Manager and before you customize it for your use, go to the Tivoli Storage Manager Web site: http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager. Click **Support and downloads** and apply any applicable fixes.

Installing Tivoli Storage Manager using the installation wizard

Using the installation wizard is one method of installing Tivoli Storage Manager.

To install Tivoli Storage Manager using the installation wizard, complete the following steps:

1. Select a method to start the installation wizard:
 - To start the wizard without saving your responses, double-click the `install.exe` file or enter the following command:
`install.exe`
 - To start the wizard and save your responses, enter the following command, and specify the `-r` option:
`install.exe -r C:\response.rsp`
- The Tivoli Storage Manager installation wizard starts.
2. Select the language for your installation and follow the wizard directions, selecting **Next** to step through the wizard. You must accept the license agreement to proceed. Then, select the components that you want to install (server, languages, licenses, device driver, storage agent). There is no default so you must make a selection or you receive an error message and are returned to the components' page. The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and GSKit 7 are automatically installed when you select the server component.
 - If you previously installed a server, ensure that you select the same directory when you install a language pack, license, or device driver. If you previously installed a storage agent, ensure that you select the same directory if you return to install a device driver.
 - A server and a storage agent cannot be installed on the same workstation.

At the end of the installation, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. If there were any errors during the installation, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The log for a new server installation is stored in the following location:

The directory that was chosen for installation (look for the files `log.txt` and `logs.zip`).

After you install a new Tivoli Storage Manager server, you must configure it. See Chapter 3, “Taking the first steps after you install Tivoli Storage Manager,” on page 17.

Installing Tivoli Storage Manager using the console installation wizard

Using the console installation wizard is one method of installing Tivoli Storage Manager.

To install Tivoli Storage Manager using the console installation wizard, complete the following steps:

1. To start the wizard without saving your responses, enter the following command:

```
install.exe -i console
```

To start the wizard and save your responses, enter the following command, and specify the `-r` option:

```
install.exe -i console -r C:\response.rsp
```
2. Select the language for your installation and follow the wizard directions, selecting **Next** to step through the wizard. You must accept the license agreement to proceed. Then, select the components that you want to install (server, languages, licenses, device driver, storage agent). There is no default so you must make a selection or you receive an error message and are returned to the components' page. The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and GSKit 7 are automatically installed when you select the server component.
 - If you previously installed a server, ensure that you select the same directory when you install a language pack, license, or device driver. If you previously installed a storage agent, ensure that you select the same directory if you return to install a device driver.
 - A server and a storage agent cannot be installed on the same workstation.

At the end of the installation, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. If there were any errors during the installation, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The log for a new server installation is stored in the following location:

The directory that was chosen for installation (look for the files `log.txt` and `logs.zip`).

After you install a new Tivoli Storage Manager server, you must configure it. See Chapter 3, "Taking the first steps after you install Tivoli Storage Manager," on page 17.

Installing Tivoli Storage Manager in silent mode

Using silent mode is one method of installing Tivoli Storage Manager.

Restriction: The following restrictions apply:

You must include `LICENSE_ACCEPTED=true` or the installation fails.

To either create a new response file or use an existing one for the silent installation, select one of the following options.

Tip: After you start the silent installation, it immediately closes the foreground window and runs in the background. To receive a return code from the silent installation, run it using a batch script. See "Installing silently using a batch script" on page 15.

- To start the silent installation, enter the following command on a single line:

```
install.exe -i silent -DLICENSE_ACCEPTED=true -DUSER_INSTALL_DIR=install_dir
-DINSTALL_SERVER=1 -DINSTALL_SERVER_LANGUAGES=1
-DINSTALL_LICENSE=1 -DINSTALL_DEVICES=1
-DINSTALL_STAGENT=1
```

You can install the following server language-packs during the silent installation, using these variables:

- INSTALL_GERMAN
- INSTALL_SPANISH
- INSTALL_FRENCH
- INSTALL_ITALIAN
- INSTALL_BRPORTUGUESE
- INSTALL_KOREAN
- INSTALL_JAPANESE
- INSTALL_RUSSIAN
- INSTALL_SCHINESE
- INSTALL_TCHINESE

For example, to install the German language pack, issue the following command:

```
install.exe -i silent -DLICENSE_ACCEPTED=true -DUSER_INSTALL_DIR=install_dir
-DINSTALL_SERVER=1 -DINSTALL_SERVER_LANGUAGES=1
-DINSTALL_GERMAN=1 -DINSTALL_LICENSE=1
```

- To use an existing response file, enter the following command:

```
install.exe -i silent -DLICENSE_ACCEPTED=true -f response_file
```

where the *response_file* is the full directory path to a file that you previously created in the Tivoli Storage Manager installation process. The response file contains variables you selected in a prior installation, using the GUI or console wizard.

If you include LICENSE_ACCEPTED=true in the response file manually, then issue this command:

```
install.exe -i silent -f response_file
```

You might see a difference between response files, depending on which installation mode you used (GUI or console).

Remember: If you previously installed a server, ensure that you select the same directory when you install a language pack, license, or device driver. If you previously installed a storage agent, ensure that you select the same directory if you return to install a device driver. Check the path in this registry: HKEY_LOCAL_MACHINE\SOFTWARE\IBM\ADSM\CurrentVersion. If the value for Path is set, you must select that same path to install other components.

Fix any errors before continuing. See the following log for more information:

The directory that was chosen for the installation (look for the file log.txt).

After you install a new Tivoli Storage Manager server, you must configure it. See Chapter 3, “Taking the first steps after you install Tivoli Storage Manager,” on page 17.

Installing silently using a batch script

To receive a return code from the silent installation, run it using a batch script.

To run the silent installation so that you can see the progress of the installation, create a batch script by completing the following steps:

1. Create a file and name it `install.bat`. The file name must end with `.bat`, not `.bat.txt`.
2. Choose an installation option (with or without a response file) and enter the command into the `install.bat` file. Save it. For example:

```
install.exe -i silent -DLICENSE_ACCEPTED=true -f response_file
```
3. Open a command prompt to run the batch file. Issue this command:

```
install.bat
```
4. After the installation is complete, issue the following command to retrieve the return code:

```
echo %ERRORLEVEL%
```

If there were any errors during the installation, a summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the directory that was chosen for the installation (look for the files `log.txt` and `logs.zip`).

To continue on and configure Tivoli Storage Manager, see Chapter 3, “Taking the first steps after you install Tivoli Storage Manager,” on page 17.

Server language locales

Translations for the IBM Tivoli Storage Manager server allows the server to display messages and help in languages other than U.S. English. It also allows for the use of locale conventions for date, time, and number formatting.

You can use the languages shown in the following tables:

Table 9. Server languages for Windows

Language	LANGUAGE option value
Chinese, Simplified	chs
Chinese, Traditional	cht
English	ameng
French	fra
German	deu
Italian	ita
Japanese	jpn
Korean	kor
Portuguese, Brazilian	ptb
Russian	rus
Spanish	esp
Notes: Refer to the <i>Administrator's Reference</i> for further information on setting the LANGUAGE option.	

Tivoli Storage Manager Console language support

With the Microsoft Management Console (MMC) snap-in, you can manage

Tivoli Storage Manager Windows and non-Windows resources across the network. To use the Tivoli Storage Manager Management Console with Windows 2003 or later, install the Version 1.2 or later MMC package. Tivoli Storage Manager includes only the American English version of the MMC package, which is installed automatically with the Tivoli Storage Manager server. To enable other language support for the Tivoli Storage Manager Console, you must install the appropriate language version of MMC.

Restriction: For Administration Center users, some characters might not display properly if the Web browser version is not the same language as the server. If this problem occurs, use a browser version that uses the same language as the server.

Installing a language package

If you install a language package, the IBM Tivoli Storage Manager server displays messages and help in languages other than U.S. English. Installation packages are provided with Tivoli Storage Manager.

To enable support for a given locale, complete one of the following tasks:

- Set the LANGUAGE option in the server options file to the name of the locale that you want to use. For example:
To use the ita locale, set the LANGUAGE option to ita. See “Server language locales” on page 15.

If the locale successfully initializes, it controls the date, time, and number formatting for the server. If the locale does not successfully initialize, the server uses the U.S. English message files and the date, time, and number format.

Chapter 3. Taking the first steps after you install Tivoli Storage Manager

After installing Tivoli Storage Manager Version 6.2, prepare for the configuration. Then, either use the configuration wizard to configure the Tivoli Storage Manager instance or configure the instance manually.

Configure the Tivoli Storage Manager server instance by completing the following steps:

1. Create the directories and user ID for the server instance. See “Creating the directories and the user ID for the server instance” on page 18.
2. Configure a Tivoli Storage Manager instance. Select one of the following options:
 - Use the Tivoli Storage Manager configuration wizard on your local system. See “Configuring Tivoli Storage Manager using the configuration wizard” on page 20.
 - Use the Management Console for a quick configuration. See “Configuring the server instance using the Management Console” on page 21.
 - Manually configure the new Tivoli Storage Manager instance. See “Configuring the server instance manually” on page 23. Complete the following steps during a manual configuration.
 - a. Set up your directories and create the Tivoli Storage Manager instance. See “Creating the server instance” on page 23.
 - b. Create a new server options file by copying the sample file in order to set up communications between the server and clients. See “Configuring server and client communications” on page 24.
 - c. Issue the DSMSERV FORMAT command to format the database. See “Formatting the database and log” on page 27.
 - d. Create a Windows service. See “Creating a Windows service for the server instance” on page 27.
 - e. Configure your system for database backup. See “Preparing the database manager for backup” on page 22.
3. Start the Tivoli Storage Manager server instance. See “Starting the server instance” on page 29.
4. Register your license. See “Registering licenses” on page 31.
5. Prepare your system for database backups. See “Preparing the system for database backups” on page 31.
6. Monitor the server. See “Monitoring the server” on page 32.

Creating the directories and the user ID for the server instance

Create the directories that the Tivoli Storage Manager server instance needs for database and recovery logs, and create the user ID for the Tivoli Storage Manager server instance.

Review the information about planning space for the server before completing this task.

1. Create directories that the server requires. You need unique, empty directories for each of the items shown in the following table. Create the database directories, the active log directory, and the archive log directory on different physical volumes. See the planning information for details.

Item	Example commands for creating the directories	Your directories
The <i>instance directory</i> for the server, which is a directory that will contain files specifically for this server instance (the server options file and other server-specific files)	<code>mkdir d:\tsm\server1</code>	
The database directories	<code>mkdir d:\tsm\db001</code> <code>mkdir e:\tsm\db002</code> <code>mkdir f:\tsm\db003</code> <code>mkdir g:\tsm\db004</code>	
Active log directory	<code>mkdir h:\tsm\log</code>	
Archive log directory	<code>mkdir i:\tsm\archlog</code>	
Optional: Directory for the log mirror for the active log	<code>mkdir j:\tsm\logmirror</code>	
Optional: Secondary archive log directory (failover location for archive log)	<code>mkdir k:\tsm\archlogfailover</code>	

2. Create the user ID that will own the server instance. You use this user ID when you create the server instance in a later step.

Create a user ID that will be the owner of the Tivoli Storage Manager server instance. A user ID can own more than one Tivoli Storage Manager server instance. Identify the user account that will own the Tivoli Storage Manager server instance.

When the server is started as a Windows service, this is the account that the service will log on to. The user account must have administrative authority on the system. One user account can own more than one server instance.

If you have multiple servers on one system and want to run each server with a different user account, create a new user account in this step.

- a. Create the user ID.

Restriction: The user ID must comply with the following rule:

In the user ID, only lowercase letters (a-z), numerals (0-9), and the underscore character (_) can be used. The user ID must be 8 characters or less, and cannot start with *ibm*, *sql*, *sys*, or a numeral.

- 1) Use the following command to create the user ID:

```
net user user_ID * /add
```

You are prompted to create and verify a password for the new user ID.

- 2) Issue the following commands to add the new user ID to the DB2 and Administrators groups:

```
net localgroup Administrators user_ID /add
net localgroup DB2ADMNS user_ID /add
net localgroup DB2USERS user_ID /add
```

- b. Log in to the system, using the new user ID and password.
- c. For all directories that were created for the server instance, ensure that the user ID for the server instance has read/write access. The directories to check include the instance directory and all database and log directories.

Configuring Tivoli Storage Manager

After you have installed Tivoli Storage Manager Version 6.2 and prepared for the configuration, configure the Tivoli Storage Manager server instance.

Configure a Tivoli Storage Manager server instance by selecting one of the following options:

- Use the Tivoli Storage Manager configuration wizard on your local system. See “Configuring Tivoli Storage Manager using the configuration wizard” on page 20.
- Use the Management Console. See “Configuring the server instance using the Management Console” on page 21.
- Manually configure the new Tivoli Storage Manager instance. See “Configuring the server instance manually” on page 23. Complete the following steps during a manual configuration.
 1. Set up the directories and create the Tivoli Storage Manager instance. See “Creating the server instance” on page 23.
 2. Create a new server options file by copying the sample file in order to set up communications between the Tivoli Storage Manager server and clients. See “Configuring server and client communications” on page 24.
 3. Issue the DSMSERV FORMAT command to format the database. See “Formatting the database and log” on page 27.
 4. Configure your system for database backup. See “Preparing the database manager for backup” on page 22.

Configuring Tivoli Storage Manager using the configuration wizard

The wizard offers a guided approach to configuring a server. By using the wizard, you can avoid some configuration steps that are complex when done manually. Start the wizard on the system where you installed the Tivoli Storage Manager Version 6.2 server program.

Before beginning the configuration wizard, you must complete all preceding steps to prepare for the configuration, including installing the Version 6.2 server program, creating the database and log directories, and creating the directories and user ID for the server instance.

1. Ensure that the following requirements are met:

- The system must have one of the following protocols enabled. Ensure that the port that the protocol uses is not blocked by a firewall.
 - Secure Shell (SSH). Ensure that the port is set to the default value, 22.
 - Remote shell (RSH).
 - Remote Execution Protocol (REXEC).

If you are running on Windows Server 2008 or Windows Vista, you might also need to disable User Account Control (at least while running this wizard). If you choose not to disable User Account Control, you must ensure that one of the other protocols is configured to allow the wizard to run. See “Using Remote Execution Protocol on Windows Vista and Windows Server 2008” on page 21 for instructions.
 - Windows server message block (SMB)

SMB is the interface used by File and Print Sharing (also known as CIFS). To use the SMB protocol, you must ensure that File and Print Sharing is enabled, and that port 445 is not blocked by your firewall.
- You must be able to log on to the system using a protocol that is enabled on the system, using either the user ID that you created for the server instance, or some other user ID that exists on the system. When using the wizard, you must provide the user ID and password to access the system.

2. Start the local version of the wizard:

Double-click the `dsmicfgx.exe` program in *installation_directory\server*.

The default directory is `C:\Program Files\Tivoli\TSM`.

Follow the instructions to complete the configuration. The wizard can be stopped and restarted, but the server is not operational until the entire configuration process is complete.

Using Remote Execution Protocol on Windows Vista and Windows Server 2008

If you are using Remote Execution Protocol (REXEC) on Windows Vista or Windows Server 2008, use these procedures to configure your settings.

On a Windows Vista and Windows Server 2008 system, you must configure the User Account Control feature before running the wizard.

1. Enable Sharing for Guest or Everyone accounts.
2. Password-protected sharing must be disabled. To disable password-protected sharing, complete the following steps:
 - a. **Start** → **Settings** → **Control Panel** → **Networking and Internet** → **Sharing and Discovery**.
 - b. Click the down arrow next to **password-protected sharing**.
 - c. Click **Turn off password protected sharing**.
 - d. Click **Apply** and exit the control panel.
3. Disable **User Account Control** if you are using a different Administrator user account to connect to a Windows Vista or Windows Server 2008 system. To disable User Account Control, complete the following steps:
 - a. **Control Panel** → **Administrative Tools** → **Local Security Policy** → **Security Settings** → **Local Policies** → **Security Options**.
 - b. Double-click **User Account Control**.
 - c. Run all administrators in Administrator Approval Mode and select **Disable**.
 - d. Restart your system.

Configuring the server instance using the Management Console

You can configure the Tivoli Storage Manager server instance by using the Management Console.

To configure the Tivoli Storage Manager server using the Management Console, complete the following steps after installing the Tivoli Storage Manager server and Tivoli Storage Manager client. For detailed instructions, refer to the *Administrator's Guide*.

1. **Start** → **Programs** → **Tivoli Storage Manager** → **Management Console** .
The **Tivoli Storage Manager Console** window opens, with the **Initial Configuration Task List** displayed. **Standard configuration** is selected by default.
2. Click **Start**. The **Server Initialization wizard** opens.
3. Click **Next** to proceed through the wizard pages. Accept the default settings provided, except change the **Log on as** account information to use an ID that has permissions for starting the server service. If you do not change the account, some of the wizards will not start. Refer to the *Server Initialization wizard* topic in the *Administrator's Guide* for detailed instructions.
4. Enable the database manager and configure the Tivoli Storage Manager application programming interface (API). See "Preparing the database manager for backup" on page 22.
5. Start the Tivoli Storage Manager server instance. See "Starting the server instance" on page 29.
6. Register your license. See "Registering licenses" on page 31.

7. Prepare your system for database backups. See “Preparing the system for database backups” on page 31.
8. Monitor the server. See “Monitoring the server” on page 32.

Preparing the database manager for backup

To back up the data in the database to Tivoli Storage Manager, you must enable the database manager and configure the Tivoli Storage Manager application programming interface (API).

If you use the Tivoli Storage Manager Server Instance Configuration wizard to create a Tivoli Storage Manager server instance, you do not need to complete these steps. If you are configuring an instance manually, complete the following steps before issuing either the BACKUP DB or the RESTORE DB commands.

Attention: If the database is unusable, the entire Tivoli Storage Manager server is unavailable. If a database is lost and cannot be recovered, it might be difficult or impossible to recover data managed by that server. Therefore, it is critically important to back up the database. However, even without the database, fragments of data or complete files might easily be read from storage pool volumes that are not encrypted. Even if data is not completely recovered, security can be compromised. For this reason, sensitive data should always be encrypted by the Tivoli Storage Manager client or the storage device, unless the storage media is physically secured.

In the following commands, the examples use server1 for the database instance and d:\tsmsserver1 for the Tivoli Storage Manager server directory. Replace these values with your actual values in the commands.

1. Create a file called tsmbdmgr.env in the d:\tsmsserver1 directory with the following contents:


```
DSMI_CONFIG=d:\tsmsserver1\tsmbdmgr.opt
DSMI_LOG=d:\tsmsserver1
```
2. Set the DSMI_ api environment-variable configuration for the database instance:
 - a. Open a DB2 command window. One method of doing this is by going to the C:\Program Files\Tivoli\TSM\db2\bin directory, or if you installed Tivoli Storage Manager in a different location, go to the db2\bin subdirectory in your main installation directory. Then, issue this command:


```
db2cmd
```
 - b. Issue this command:


```
db2set -i server1 DB2_VENDOR_INI=d:\tsmsserver1\tsmbdmgr.env
```
3. Create a file called tsmbdmgr.opt in the d:\tsmsserver1 directory with the following contents:


```
*****
nodename $$_TSMDBMGR_$$
commethod tcpip
tcpserveraddr localhost
tcpport 1500
passwordaccess generate
errorlogname d:\tsmsserver1\TSMDBMGR_TSMSEVER1.log
```
4. Stop and start the database instance:
 - a. Open a DB2 command window. One method of doing this is by going to the C:\Program Files\Tivoli\TSM\db2\bin directory, or if you installed Tivoli Storage Manager in a different location, go to the db2\bin subdirectory in your main installation directory. Then, issue this command:


```
db2cmd
```

- b. Set the database instance:
`set db2instance=server1`
- c. Stop DB2:
`db2stop`
- d. Start DB2:
`db2start`
5. Enter the following command on one line:
`"c:\program files\tivoli\tsm\server\dsmsutil.exe"
UPDATEPW /NODE:$$_TSMDBMGR_$$ /PASSWORD:TSMDBMGR /VALIDATE:NO /OPTFILE:
"d:\tsmsserver1\tsmdbmgr.opt"`

Configuring the server instance manually

After installing Tivoli Storage Manager Version 6.2, you can configure Tivoli Storage Manager manually instead of using the configuration wizard.

Creating the server instance

Create a Tivoli Storage Manager instance by issuing the `db2icrt` command.

You can have one or more server instances on one workstation.

Important: Before you run the `db2icrt` command, ensure that the user and the instance directory of the user exists. If there is no instance directory, you must create it.

The instance directory stores the following files for the server instance:

- The server options file, `dsmserv.opt`
 - The `dsmserv.v6lock` file
 - Device configuration file, if the `DEVCONFIG` server option does not specify a fully qualified name
 - Volume history file, if the `VOLUMEHISTORY` server option does not specify a fully qualified name
 - Volumes for **DEVTYPE=FILE** storage pools, if the directory for the device class is not fully specified, or not fully qualified
 - User exits
 - Trace output (if not fully qualified)
1. Log in as an administrator and create a Tivoli Storage Manager instance, using the `db2icrt` command. Enter the following command on one line. The user account that you specify becomes the user ID that owns the Version 6.2 server (the instance user ID).

```
db2icrt -u user_account instance_name
```

For example, if the user account is `tsminst1` and the server instance is `Server1`, enter the following command:

```
db2icrt -u tsminst1 server1
```

You are prompted for the password for user ID `tsminst1`. Later, when you create and format the database, you use the instance name that you specified with this command, with the `-k` option.

2. Change the default path for the database to be the drive where the instance directory for the server is located. Complete the following steps:
 - a. Click **Start** → **Programs** → **IBM DB2** → **DB2TSM1** → **Command Line Tools** → **Command Line Processor**.

- b. Enter `quit` to exit the command-line processor.

A window with a command prompt should now be open, with the environment properly set up to successfully issue the commands in the next steps.

- c. From the command prompt in that window, issue the following command to set the environment variable for the server instance that you are working with:

```
set db2instance=instance_name
```

The *instance_name* is the same as the instance name that you specified when you issued the `db2icrt` command. For example, to set the environment variable for the `Server1` server instance, issue the following command:

```
set db2instance=server1
```

- d. Issue the command to set the default drive:

```
db2 update dbm cfg using dftdbpath instance_location
```

For example, if the instance directory is `d:\tsm\server1`, the instance location is drive `d:`. Enter the command:

```
db2 update dbm cfg using dftdbpath d:
```

3. Create a new server options file. See “Configuring server and client communications.”

Configuring server and client communications

After installing Tivoli Storage Manager, you can set up client and server communications by specifying options in the Tivoli Storage Manager server and client options files.

Set these server options before you start the server. When you start the server, the new options go into effect. If you modify any server options after starting the server, you must stop and restart the server to activate the updated options.

Use the Server Options utility that is available from the Tivoli Storage Manager Console to view and specify server communications options. This utility is available from the **Service Information** view in the server tree. By default, the server uses the TCP/IP and Named Pipes communication methods.

Tip: If you start the server console and see warning messages that a protocol could not be used by the server, either the protocol is not installed or the settings do not match the Windows protocol settings.

For a client to use a protocol that is enabled on the server, the client options file must contain corresponding values for communication options. From the Server Options utility, you can view the values for each protocol.

For more information about server options, see the *Administrator's Reference*.

Setting TCP/IP options:

Select from a range of TCP/IP options for the Tivoli Storage Manager server or retain the default.

The following is an example of a list of TCP/IP options you can use to set up your system.

```
commethod      tcpip
tcpport        1500
tcpwindowsize  0
tcpnodelay     yes
```

Tip: You can use TCP/IP Version 4, Version 6, or both.

TCPPORT

The server TCP/IP port address. The default value is 1500.

TCPWINDOWSIZE

Specifies the size of the TCP/IP buffer that is used when sending or receiving data. The window size that is used in a session is the smaller of the server and client window sizes. Larger window sizes use additional memory but can improve performance.

To use the default window size for the operating system, specify 0.

TCPNODELAY

Specifies whether or not the server sends small messages or lets TCP/IP buffer the messages. Sending small messages can improve throughput but increases the number of packets sent over the network. Specify YES to send small messages or NO to let TCP/IP buffer them. The default is YES.

TCPADMINPORT

Specifies the port number on which the server TCP/IP communication driver is to wait for requests other than client sessions. The default value is 1500.

SSLTCPPORT

(SSL-only) Specifies the Secure Sockets Layer (SSL) port number on which the server TCP/IP communication driver waits for requests for SSL-enabled sessions for the command-line backup-archive client and the command-line administrative client.

SSLTCPADMINPORT

Specifies the port address on which the server TCP/IP communication driver waits for requests for SSL-enabled sessions for the command-line administrative client.

Setting Named Pipes options:

The Named Pipes communication method is ideal when running the server and client on the same Windows machine. Named Pipes require no special configuration.

Here is an example of a Named Pipes setting:

```
commethod      namedpipe
namedpipename  \\.\pipe\adsmpipe
```

Setting shared memory options:

You can use shared memory communications between clients and servers on the same system. To use shared memory, TCP/IP Version 4 must be installed on the system.

The following example shows a shared memory setting:

commethod	sharedmem
shmport	1510

In this example, SHMPORT specifies the TCP/IP port address of a server when using shared memory. Use the SHMPORT option to specify a different TCP/IP port. The default port address is 1510.

Setting SNMP DPI subagent options:

Tivoli Storage Manager implements a simple network management protocol (SNMP) subagent. You can configure the SNMP subagent to send traps to an SNMP manager, such as NetView®, and to provide support for a Management Information Base (MIB).

For details about configuring SNMP for use with Tivoli Storage Manager, see the *Administrator's Guide*.

The subagent communicates with the snmp daemon, which in turn communicates with a management application. The snmp daemon must support the DPI® protocol. The subagent process is separate from the Tivoli Storage Manager server process, but the subagent gets its information from a server options file. When the SNMP management application is enabled, it can get information and messages from servers.

Use the following SNMP DPI options as an example of a SNMP setting. You must specify the COMMETHOD option. For details about the other options, see the *Administrator's Reference*.

commethod	snmp
snmpheartbeatinterval	5
snmpmessagecategory	severity

Formatting the database and log

Use the DSMSEVER FORMAT command to initialize a server instance. No other server activity is allowed while initializing the database and recovery log.

After you have completed setting up server communications, you are ready to initialize the database. Do not place the directories on file systems that might run out of space. If certain directories (for example, the archive log) become unavailable or full, the server stops. See “Capacity planning” on page 6 for more details.

Important: The installation program creates a set of registry keys. One of these keys points to the directory where a default server, named SERVER1, is created. To install an additional server, create a new directory and use the DSMSEVER FORMAT utility, with the -k parameter, from that directory. That directory becomes the location of the server. The registry tracks the installed servers.

Example: Format a database

Enter the following command on one line.

```
dsmserv -k server2 format dbdir=d:\tmserv2\db  
activelogdir=e:\tmserv2\activelog archlogdir=f:\tmserv2\archlog
```

Creating a Windows service for the server instance

Install the Tivoli Storage Manager server as a Windows service during manual configuration of the Tivoli Storage Manager server.

After you have completed formatting the database and log, you are ready to create a Windows service for your server instance.

1. Change to the C:\Program Files\Tivoli\TSM\console directory, or if you installed Tivoli Storage Manager in a different location, go to the console subdirectory in your main installation directory. An executable (install.exe) in this directory installs the Tivoli Storage Manager server as a Windows service.
2. Install the Windows service, using the same server name that you used to start the Tivoli Storage Manager server. Issue the following command:

```
install "TSM server#"
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"
windowsacctname windowsacctpassword
```

For example, if the server instance is Server1, enter the following command on one line:

```
install "TSM server1"
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"
windowsacctname windowsacctpassword
```

If a different name was used or there are multiple server instances running on the system, modify the service name.

After installing the Windows service, you have to manually change the service to an automatic startup type. Do this by going to Windows **Administrative Tools** → **Services**.

Example 1. If you are installing the Windows service using an administrator account to log on, issue the following command:

```
install "TSM Server1"
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"
admin_name admin_password
```

The *admin_name* is the Windows administrator name and the *admin_password* is the password for that administrator.

Example 2. If you are installing the Windows service using LocalSystem as the logon account, issue the following command:

```
install "TSM Server1"  
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"  
localsystem ""
```

The LocalSystem account does not have a password so use the double quotes (" ") to specify a NULL password.

Preparing the database manager for backup

To back up the data in the database to Tivoli Storage Manager, you must enable the database manager and configure the Tivoli Storage Manager application programming interface (API).

If you use the Tivoli Storage Manager Server Instance Configuration wizard to create a Tivoli Storage Manager server instance, you do not need to complete these steps. If you are configuring an instance manually, complete the following steps before issuing either the BACKUP DB or the RESTORE DB commands.

Attention: If the database is unusable, the entire Tivoli Storage Manager server is unavailable. If a database is lost and cannot be recovered, it might be difficult or impossible to recover data managed by that server. Therefore, It is critically important to back up the database. However, even without the database, fragments of data or complete files might easily be read from storage pool volumes that are not encrypted. Even if data is not completely recovered, security can be compromised. For this reason, sensitive data should always be encrypted by the Tivoli Storage Manager client or the storage device, unless the storage media is physically secured.

In the following commands, the examples use server1 for the database instance and d:\tsmsserver1 for the Tivoli Storage Manager server directory. Replace these values with your actual values in the commands.

1. Create a file called tsmbdmgr.env in the d:\tsmsserver1 directory with the following contents:
DSMI_CONFIG=d:\tsmsserver1\tsmbdmgr.opt
DSMI_LOG=d:\tsmsserver1
2. Set the DSMI_ api environment-variable configuration for the database instance:
 - a. Open a DB2 command window. One method of doing this is by going to the C:\Program Files\Tivoli\TSM\db2\bin directory, or if you installed Tivoli Storage Manager in a different location, go to the db2\bin subdirectory in your main installation directory. Then, issue this command:
db2cmd
 - b. Issue this command:
db2set -i server1 DB2_VENDOR_INI=d:\tsmsserver1\tsmbdmgr.env
3. Create a file called tsmbdmgr.opt in the d:\tsmsserver1 directory with the following contents:

nodename \$\$_TSMDBMGR_\$\$
commethod tcpip
tcpserveraddr localhost

```
tcpport 1500
passwordaccess generate
errorlogname d:\tsmsserver1\TSMDBMGR_TSMSEVER1.log
```

4. Stop and start the database instance:

- a. Open a DB2 command window. One method of doing this is by going to the C:\Program Files\Tivoli\TSM\db2\bin directory, or if you installed Tivoli Storage Manager in a different location, go to the db2\bin subdirectory in your main installation directory. Then, issue this command:

```
db2cmd
```

- b. Set the database instance:

```
set db2instance=server1
```

- c. Stop DB2:

```
db2stop
```

- d. Start DB2:

```
db2start
```

5. Enter the following command on one line:

```
"c:\program files\tivoli\tsm\server\dsmsutil.exe"
UPDATEPW /NODE:$$_TSMDBMGR_$$ /PASSWORD:TSMDBMGR /VALIDATE:NO /OPTFILE:
"d:\tsmsserver1\tsmdbmgr.opt"
```

Starting the server instance

Verify that the server instance is correctly set up by starting the Tivoli Storage Manager instance.

Remember: Starting the server is an operating system-level operation and has certain restrictions. If you do not have the permissions to use the dsmserv program, you cannot start it. If you do not have authority to read/write files in the instance directory, you cannot start that instance of the server.

To start the server from the C:\Program Files\Tivoli\TSM server directory, enter:

```
dsmserv -k server_instance
```

where *server_instance* is the name of your server instance. Server1 is the default for the first instance of the Tivoli Storage Manager server.

Note: If you receive a Windows error 216 message when you try to start the server, it is a result of using a 64-bit package on 32-bit Windows. Retrieve the 32-bit Windows package and reinstall Tivoli Storage Manager.

Starting the server using Windows services

You can use the Tivoli Storage Manager Management Console (a Microsoft Management Console snap-in), or the Windows Services Control Manager to start the server.

To start the Tivoli Storage Manager server using the Tivoli Storage Manager Management Console, the name of server instance must be one of the standards: Server1, Server2, Server3, or Server4. If you created the server instance using the Tivoli Storage Manager Management Console, the name of the server instance is automatically one of the standard values. If a different method was used to create the server instance, the instance name must be one of the standard values so that you can start it using Windows services.

Start the server as a Windows service using one of the following methods.

- To start the server using the Tivoli Storage Manager Management Console, complete the following steps. Optionally, you can set the server start mode and options.
 1. From the Start menu, click **Programs** → **Tivoli Storage Manager** → **Management Console**.
 2. Start the console monitor. It is important to monitor server activity with the administrative client using the console monitor because the Tivoli Storage Manager server can issue requests that require action.
 - a. Expand the tree until the server that you want to work with is displayed. Then, expand the server and the **Reports** tree under the selected server.
 - b. Select **Monitor** and right-click it. Then, click **Start**.
 3. Start the server as a Windows service.
 - a. Expand the tree until the server that you want to work with is displayed. Then, expand the server and the **Reports** tree under the selected server.
 - b. Select **Service Information**.
 - c. Select the server in the right pane and right-click it. Then, click **Properties**.
 - d. Select the **Log on as** account information. Change the default selection, which is the System account, to use an ID that has permissions for starting the server service.
 - e. Select the server in the right pane and right-click it. Then, click **Start**.
 4. Optional: Set the server start mode and options.
 - a. Expand the tree until the server that you want to work with is displayed. Then, expand the server and the **Reports** tree under the selected server.
 - b. Select **Service Information**.
 - c. Select the server in the right pane and right-click it. Then, click **Properties**.
 - d. Select either Automatic or Manual as the **Startup Type**.
 - e. Check the **Log output to file** check box. Use the default console.log file name or specify another file name.
- To start the server using the Windows Services Control Manager, complete the following steps:
 1. From the Start menu, click **Programs** → **Administrative Tools** → **Services**. You should see your service listed in the **Services** section of the page.
 2. Select your service in the list, right-click it, and then click **Start**.
 3. Set the service **Startup Type** and **Log on** account information.
 - a. Select your service in the list, right-click it, and then click **Properties**.
 - b. Select either Automatic, Manual, or Disabled as the **Startup Type**.
 - c. Change the account under which the service logs on.

If you want to see the start and stop completion messages that are logged in the Windows Application log, you can use the Windows Event Viewer in Administrative Tools.

Stopping the server

You can stop the server without warning if an unexpected problem requires you to return control to the operating system. To avoid losing administrative and client node connections, stop the server only after current sessions have completed or been canceled.

To stop the server, issue the following command from the Tivoli Storage Manager command prompt:

```
halt
```

The server console stops.

Tip: If you start the Tivoli Storage Manager server as a service, after you stop it, the database service continues to run.

Registering licenses

Immediately register any Tivoli Storage Manager licensed functions that you purchase so you do not lose any data after you start server operations, such as backing up your data. Use the REGISTER LICENSE command for this task.

Preparing the system for database backups

To prepare the system for automatic and manual database backups, you must specify the device class to be used.

Before you begin the setup, ensure that you have defined a tape or file device class. See the defining device classes section of the *Administrator's Guide*.

To set up your system for database backups, issue the SET DBRECOVERY command to specify a device class to be used for the backups. You can also change the device class to be used for database backups with the SET DBRECOVERY command.

Perform the following setup procedure:

1. If you did not use the configuration wizard (dsmicfgx) to configure the server, ensure that you have completed the steps to manually configure the system for database backups.
2. Select the device class to be used for backups of the database. Issue the following command from a IBM Tivoli Storage Manager administrative command line.

```
set dbrecovery device_class_name
```

The device class that you specify is used by the database manager for database backups. If you do not specify a device class with the SET DBRECOVERY command, the backup fails.

For example, to specify that the **DBBACK** device class is to be used, issue this command:

```
set dbrecovery ddback
```

When you are ready to back up your database, see the BACKUP DB command in the *Administrator's Reference*.

Running multiple server instances on a single system

It is possible to create more than one server instance on your system. Each server instance has its own instance directory, and database and log directories.

Multiply the memory and other system requirements for one server by the number of instances planned for the system.

The set of files for one instance of the server are stored separately from those used by another server instance on the same system. Use the steps in “Creating the server instance” on page 23 for each new instance, optionally creating the new instance user.

To manage the system memory that is used by each server, use the DBMEMPERCENT server option to limit the percentage of system memory. If all servers are equally important, use the same value for each server. If one server is a production server and other servers are test servers, set the value for the production server to a higher value than the test servers.

If you are upgrading from Tivoli Storage Manager Version 6.1 to Version 6.2 and have multiple servers on your system, you only have to run the upgrade wizard once. The upgrade wizard collects the database and variables information for all of your V6.1 server instances. All instances that exist in DB2 Version 9.5 are dropped and recreated in DB2 Version 9.7. The wizard issues the `db2 upgrade db dbname` command for each database. The database environment variables for each instance on your system are also reconfigured during the upgrade process.

Monitoring the server

When you start using server in production operation, monitor the space used by the server to ensure that the amount of space is adequate. Make adjustments as needed.

1. Monitor the active log, to ensure that the size is correct for the workload that is handled by the server instance.

When the server workload is up to its typical expected level, and the space that is used by the active log is 80 - 90% of the space that is available to the active log directory, you might need to increase the amount of space. Whether you need to increase the space depends on the types of transactions in the server's workload, because transaction characteristics affect how the active log space is used.

The following transaction characteristics can affect the space usage in the active log:

- The number and size of files in backup operations
 - Clients such as file servers that back up large numbers of small files can cause large numbers of transactions that complete during a short period of time. The transactions might use a large amount of space in the active log, but for a short period of time.
 - Clients such as a mail server or a database server that back up large chunks of data in few transactions can cause small numbers of transactions that take a long time to complete. The transactions might use a small amount of space in the active log, but for a long period of time.
- Network connection types

- Backup operations that occur over fast network connections cause transactions that complete more quickly. The transactions use space in the active log for a shorter period of time.
- Backup operations that occur over relatively slower connections cause transactions that take a longer time to complete. The transactions use space in the active log for a longer period of time.

If the server is handling transactions with a wide variety of characteristics, the space that is used for the active log might go up and down by a large amount over time. For such a server, you might need to ensure that the active log typically has a smaller percentage of its space used. The extra space allows the active log to grow for transactions that take a very long time to complete, for example.

2. Monitor the archive log to ensure that space is always available.

Remember: If the archive log becomes full, and the failover archive log becomes full, the active log can become full and the server will stop. The goal is to make enough space available to the archive log so that it never uses all its available space.

You are likely to notice the following pattern:

- a. Initially, the archive log grows rapidly as typical client-backup operations occur.
- b. Database backups occur regularly, either as scheduled or done manually.
- c. After at least two full database backups occur, log pruning occurs automatically. The space used by the archive log decreases when the pruning occurs.
- d. Normal client operations continue, and the archive log grows again.
- e. Database backups occur regularly, and log pruning occurs as often as full database backups occur.

With this pattern, the archive log grows initially, then decreases, then might grow again. Over a period of time, as normal operations continue, the amount of space used by the archive log should reach a relatively constant level.

If the archive log continues to grow, consider taking one or both of these actions:

- Add space to the archive log. This might mean moving the archive log to a different file system.

For information about moving the archive log, see the *Tivoli Storage Manager Administrator's Guide*.

- Increase the frequency of full database backups, so that log pruning occurs more frequently.
3. If you defined a directory for the failover archive log, determine whether any logs get stored in that directory during normal operations. If the failover log space is being used, consider increasing the size of the archive log. The goal is that the failover archive log is used only under unusual conditions, not in normal operation.

Chapter 4. Installing the reporting and monitoring feature

IBM Tivoli Storage Manager reporting and monitoring provides information and reports about the IBM Tivoli Storage Manager servers and client activity.

The Tivoli Storage Manager reporting and monitoring feature installs the following components:

- IBM Tivoli Monitoring, which includes of the following components:
 - IBM DB2
 - IBM Tivoli Monitoring
 - Tivoli Enterprise Portal
 - Tivoli Data Warehouse
 - Tivoli Enterprise Monitoring Server
 - Summarization Pruning Agent
 - Warehouse Proxy Agent
- Tivoli Storage Manager reporting and monitoring agent

To view historical reports only, (no access to current data on the Tivoli Enterprise Portal) you have to install the Administration Center. For details on installing the Administration Center, see Chapter 5, “Installing and configuring the Administration Center,” on page 55.

For more details on how the Tivoli Storage Manager data flows between components see the *IBM Tivoli Storage Manager Administrator's Guide* for your operating system.

To create your own reports, you are also required to install the Business Intelligence and Reporting Tools (BIRT) software. The Tivoli Storage Manager reporting and monitoring feature does not have an option to create custom reports using Tivoli Storage Manager.

For more details on using custom reporting, see “Installing software for custom reporting” on page 53.

Related information

 [IBM Tivoli Storage Manager reporting and monitoring feature information roadmap](#)

Planning to install the Tivoli Storage Manager reporting and monitoring feature

Before installing the Tivoli Storage Manager reporting and monitoring feature, there are some decisions you must make.

You have IBM Tivoli Monitoring currently installed on a server

If you are currently using IBM Tivoli Monitoring, the Tivoli Storage Manager reporting and monitoring feature can be installed on your existing IBM Tivoli Monitoring server but the following requirements must be met:

- The IBM Tivoli Monitoring server must be a fully-licensed version of IBM Tivoli Monitoring.
- The IBM Tivoli Monitoring server must be at the **6.2 FP1** or higher level.
- Because the Tivoli Enterprise Monitoring Server controls the reporting and monitoring agent, the agent must be installed on your existing Tivoli Enterprise Monitoring Server. You can install the reporting and monitoring agent on any IBM Tivoli Monitoring server, but it is required on the Tivoli Enterprise Monitoring Server.

For this type of reporting and monitoring installation, the **Reporting and monitoring feature** option would not be checked on the installation wizard and the IBM Tivoli Monitoring server is identified when prompted by the installation script.

The version of IBM Tivoli Monitoring that you install with the reporting and monitoring feature can only be used for Tivoli Storage Manager reporting and monitoring functions.

You cannot upgrade or downgrade your existing IBM Tivoli Monitoring installation using the Tivoli Storage Manager reporting and monitoring installation wizard.

You do not have IBM Tivoli Monitoring installed on a server

In this situation, you must install all components of the Tivoli Storage Manager reporting and monitoring feature on one server.

The Tivoli Storage Manager server 6.2 and higher versions must be installed on a separate system.

Besides the **Reporting and monitoring feature** component, the **Reporting and monitoring agent** component is also required as part of data collection and monitoring and is installed on the Tivoli Storage Manager reporting and monitoring server.

Requirements for the Tivoli Storage Manager reporting and monitoring agent configuration

The only time you configure the reporting and monitoring agent on the server where you installed the **Reporting and monitoring feature** component is when you have the following conditions:

- If you have an IT environment that has less than 10 Tivoli Storage Manager servers.
- If you want to establish a prototype of the Tivoli Storage Manager server to test the installation first.

Collecting data from multiple Tivoli Storage Manager servers using this configuration requires creation of multiple reporting and monitoring agent instances and results in using large amounts of memory. For reporting and monitoring, you need an additional 4 GB or more of memory on the Tivoli Storage Manager server to provide optimum performance.

For an IT environment that has more than 10 Tivoli Storage Manager servers, install the reporting and monitoring agent on each Tivoli Storage Manager server that you want to monitor. This configuration allows for the most efficient use of

memory on both the Tivoli Storage Manager server and the IBM Tivoli Monitoring server.

Installation scenarios for the reporting and monitoring feature

Depending on the type of reporting installation you are performing, you install different components. The following situations describe three installation scenarios and list the components you install for each scenario:

- You have Tivoli Storage Manager, version 5.5 or 6.1 and you want to install the reporting and monitoring feature only.
 - You install the reporting and monitoring agent on your Tivoli Storage Manager server.
 - You install the following components on a different system which will be your Tivoli Storage Manager reporting and monitoring server:
 - Tivoli Storage Manager reporting and monitoring feature
 - Reporting and monitoring agent
 - Reporting and monitoring languages
 - Tivoli Storage Manager Administration CenterFor details on installing the Administration Center, see Chapter 5, “Installing and configuring the Administration Center,” on page 55. It is not available through the Tivoli Storage Manager reporting and monitoring feature installation wizard.
- You are installing Tivoli Storage Manager, version 6.2 for the first time and you want to install both Tivoli Storage Manager server and the Tivoli Storage Manager reporting and monitoring feature.
 1. You install Tivoli Storage Manager, version 6.2 and the reporting and monitoring agent on one system.
 2. You install the following components on a different system which will be your Tivoli Storage Manager server:
 - Tivoli Storage Manager reporting and monitoring feature
 - Reporting and monitoring agent
 - Reporting and monitoring languages
 - Tivoli Storage Manager Administration CenterFor details on installing the Administration Center, see Chapter 5, “Installing and configuring the Administration Center,” on page 55. It is not available through the Tivoli Storage Manager reporting and monitoring feature installation wizard.
- You have Tivoli Storage Manager, version 5.5 or 6.1 installed and you want to upgrade to Tivoli Storage Manager, version 6.2.
 1. You upgrade your Tivoli Storage Manager, version 5.5 or 6.1 server to Tivoli Storage Manager, version 6.2 and install the Tivoli Storage Manager reporting and monitoring agent on this system.
 2. You install the following components on a different system which will be your Tivoli Storage Manager reporting and monitoring server:
 - Tivoli Storage Manager reporting and monitoring feature
 - Tivoli Storage Manager reporting and monitoring agent
 - Tivoli Storage Manager reporting and monitoring languages
 - Tivoli Storage Manager Administration CenterFor details on installing the Administration Center, see Chapter 5, “Installing and configuring the Administration Center,” on page 55. It is

not available through the Tivoli Storage Manager reporting and monitoring feature installation wizard.

System requirements for Tivoli Storage Manager reporting and monitoring

There are hardware and software requirements your system must meet before the reporting and monitoring feature is installed.

Hardware requirements

Table 10 describes the hardware requirements for the Tivoli Storage Manager reporting and monitoring feature.

Table 10. Hardware requirements

Type of hardware	Hardware requirements
Hardware	<ul style="list-style-type: none">• Dual core Intel® Pentium® compatible processor or multiprocessor-based computer with a 2Ghz or greater processor• Minimum 64 bit system for AIX• Network interface card• Graphic display adapter
Disk space	<ul style="list-style-type: none">• 30 GB free disk space (minimum). Requirements increase as historical data is gathered and stored in Tivoli Data Warehouse.• Minimum, 10 GB free space made available in the home directory where the warehouse data is stored.
Memory	<ul style="list-style-type: none">• 3 GB minimum• If Tivoli Storage Manager monitoring agents are installed on the Tivoli Monitoring server, memory requirements increase quickly as the number of Tivoli Storage Manager servers are monitored from that one IBM Tivoli Monitoring server.• If a Tivoli Storage Manager monitoring agent is installed on a Tivoli Storage Manager server, there is only a single instance of the agent is running on the Tivoli Storage Manager server and no increases in memory requirements are needed by the IBM Tivoli Monitoring server.
Monitor	Set your monitor resolution to 1024 x 768 (minimum) in order to view the entire window.

Software requirements

Table 11 describes the minimum software requirements for the Tivoli Storage Manager reporting and monitoring feature.

Table 11. Software requirements

Type of software	Minimum software requirements
Operating System	See Table 12 on page 39 for a complete list of supported operating systems and components.

Table 11. Software requirements (continued)

Type of software	Minimum software requirements
Web browser	<p>A Web browser to log on and use the console. The Web browser can be installed on the same or a separate system. The following browsers can be used:</p> <ul style="list-style-type: none"> • Microsoft Internet Explorer 6.x (Windows systems only) • Firefox 1.0.2 • Firefox 1.3 • Firefox 1.4 <p>Mozilla has published some fixes you might need to run on AIX systems</p> <ul style="list-style-type: none"> • Netscape 6.2 • Netscape 7 <p>Your browser must support the server code page. If your browser does not support the server code page, the windows might be unreadable. If your browser meets these requirements but does not correctly display a Tivoli Storage Manager Web-based interface, consider using a different browser.</p>
Communication Protocol	<p>At least one of the following communication protocols:</p> <ul style="list-style-type: none"> • Named Pipes • TCP/IP Version 4 or Version 6
Optional software	<p>The following optional software is required for creating your own custom reports:</p> <ul style="list-style-type: none"> • Business Intelligence and Reporting Tools (BIRT), version 2.2.1, All-In-One software • IBM Java 1.5 Java Developers Kit/Java Runtime Environment (JDK/JRE) installed on the server where you are creating custom reports

Table 12 lists the operating systems that are supported by Tivoli Monitoring and the reporting and monitoring feature.

Table 12. Supported operating systems

Operating systems	Feature: (IBM Tivoli Monitoring server, reporting component, and data collection agent)	Data collection agent only
Windows 2003	X	X
Windows 2003 64 bit	X	X
Windows 2008	X	X
Windows 2008 64 bit	X	X
AIX 5.3 64 bit	X	X
AIX 6.1 64 bit	X	X
RHEL 5 32 bit Intel	X	X
RHEL 5 32 bit Intel Xeon	X	X

Table 12. Supported operating systems (continued)

Operating systems	Feature: (IBM Tivoli Monitoring server, reporting component, and data collection agent)	Data collection agent only
RHEL 5 32 bit Intel AMD		X
SLES 10 32 bit Intel		X
SLES 10 32 bit Intel Xeon		X
SLES 10 32 bit Intel AMD		X
RHEL 5 64 bit Intel		X
RHEL 5 64 bit Intel Xeon		X
RHEL 5 64 bit AMD		X
SLES 10 64 bit Intel		X
SLES 10 64 bit Intel Xeon		X
SLES 10 64 bit Intel AMD		X
Important: If you are installing a reporting and monitoring agent, and you previously installed an IBM Tivoli Monitoring server, you must install the reporting and monitoring agent on the existing Tivoli Enterprise Monitoring Server. The reporting and monitoring feature is only supported with IBM Tivoli Monitoring, version 6.2 FP1.		

Related tasks

“Installing a reporting and monitoring agent” on page 48

“Installing software for custom reporting” on page 53

Work sheet for installation information

Use the work sheet to record information that you need during installation and administration of the Tivoli Storage Manager reporting and monitoring feature.

Table 13. Work sheet for installation information for Tivoli Storage Manager reporting and monitoring

Item	Description	Default value*
db2 user ID	The user name and password for the administrator for the IBM Tivoli Data Warehouse database. This user has permission to do all the administrative tasks in DB2.	User name: db2admin Password:
encryption key	The encryption key needs to be the same for any agent trying to access the Tivoli Enterprise Monitoring server.	IBMTivoliMonitoringEncryptionKey

Table 13. Work sheet for installation information for Tivoli Storage Manager reporting and monitoring (continued)

Item	Description	Default value*
sysadmin	User name and password for access to the Tivoli Enterprise Portal.	User name: sysadmin Password:
ITMUser	User name and password for access to the Tivoli Data Warehouse. This user has access to read the information from the WAREHOUS database.	User name: ITMuser
DB2 port	default port number	50000
*Best practices are to use the default values listed here. If you change these values ensure that you document them because they are needed later.		

Installing the Tivoli Storage Manager reporting and monitoring feature using the installation wizard

You can install the Tivoli Storage Manager reporting and monitoring feature using the Tivoli Storage Manager reporting and monitoring installation wizard.

Confirm your system meets the system hardware and software and component requirements. See “System requirements for Tivoli Storage Manager reporting and monitoring” on page 38.

Confirm you have the required access privileges. See “Work sheet for installation information” on page 40.

To install the Tivoli Storage Manager reporting and monitoring feature, complete the following steps:

1. Insert the Tivoli Storage Manager reporting and monitoring feature DVD. The Tivoli Storage Manager reporting and monitoring installation wizard starts.
If the installation wizard does not automatically start, click the **install.exe** file located in the directory where the Tivoli Storage Manager reporting and monitoring feature DVD is located. The default directory is *D:*.
2. Select the language for the wizard at the bottom of the page and click **OK**.
3. Accept the license agreement to proceed. Click **Next**.
4. On the **Component Selection** page, select the components that you want to install and click **Next**. To view the product in a language other than English, select the **Language package for feature** option and the **Language pack for agent only** option.

Attention: The installer checks the version level of any components you have previously installed. You can get the message: **No components to install** in the following scenarios:

- If you are installing the Reporting and monitoring feature, the feature language package, and the monitoring agent language package, and they are all at the same level or higher.
- If you are installing just the reporting and monitoring agent and the agent language package and they are all at the same level or higher.

If you get this message, select **Enter** to exit out of the installer.

5. If you selected the option to install the **Reporting and monitoring feature** component, accept the Tivoli Monitoring license agreement to proceed. Click **Next**.
6. Select the destination directory for this installation. If you are installing into an existing IBM Tivoli Monitoring environment, choose the exact directory where that code is installed.
7. The DB2 Enterprise Server Edition page is displayed. In the **DB2 password** field, enter the password for the **ITMuser** twice. It cannot be longer than 14 characters. Leave all other selections with the default. Click **Next**.
8. The Encryption page is displayed. Enter the encryption key and click **Next**. Make note of this key for later use.
9. The WebSphere Business Monitor Data Access Setup page is displayed. In the **Sysadmin ID password** field, enter the password twice. Click **Next**. This ID is the user ID and password for the Tivoli Enterprise Portal, where you can monitor real-time data.
10. The Database Access Setup page is displayed. In the **Database user ID password** field, enter the password twice and click **Next**. This ID is the user ID and password for the Tivoli Enterprise Portal Server database.
11. Accept the default installation location and click **Next**.
12. You are presented with the pre-installation summary of your configuration. Perform one of the following tasks:
 - To start the installation, click **Install**.
 - To make corrections or changes, click **Previous**.

At the end of the installation, the Installation Results page presents a message with the installation results. If there were any errors during the installation, the summary page lists the errors and directs you to an error log file.

To view historical reports, install the Administration Center. If you have not installed the Administration Center yet, install it next. See Chapter 5, “Installing and configuring the Administration Center,” on page 55 for details.

After the Tivoli Storage Manager reporting and monitoring installation wizard has completed the installation, you must complete the following tasks before you can collect historical data. If you plan to install the reporting and monitoring agent on the Tivoli Storage Manager server, that must be done before continuing to the other configuration steps.

1. If you want to collect and view historical data, configure the Tivoli Enterprise Portal Server.
2. Create and configure the Tivoli Data Warehouse database.
3. Configure the reporting and monitoring agent on the system you identified for your environment during planning.

4. Configure and activate the summarization and pruning agent using Manage Tivoli Enterprise Monitoring Services. The summarization and pruning agent schedules the data that the historical reports use.
5. Create and configure the historical data collection configuration using the Tivoli Enterprise Portal. The historical configuration allows real-time data in the Tivoli Enterprise Portal to be stored in the Tivoli Data Warehouse.

Related tasks

“Configuring the Tivoli Enterprise Portal server” on page 44

“Configuring Tivoli Data Warehouse” on page 45

“Installing a reporting and monitoring agent” on page 48

“Configuring and activating the Warehouse Summarization and Pruning agent” on page 45

Taking the first steps after you install the Tivoli Storage Manager reporting and monitoring feature

After you install the Tivoli Storage Manager reporting and monitoring feature, there are several configuration tasks that you need to perform to enable reporting for historical data collection.

1. Configure the Tivoli Enterprise Portal Server to view real-time monitoring information for the configured Tivoli Storage Manager servers and clients. You must also configure the portal in order to collect and view historical data. See “Configuring the Tivoli Enterprise Portal server” on page 44.
2. Configure the IBM Tivoli Data Warehouse and the Summarization and Pruning Agent in order to collect and view reports on the historical data using the Manage Tivoli Enterprise Monitoring Services application.
 - See “Configuring Tivoli Data Warehouse” on page 45
 - See “Configuring and activating the Warehouse Summarization and Pruning agent” on page 45
3. Configure the Tivoli Enterprise Portal to actually start the historical data collection. See “Configuring historical data collection using the Tivoli Enterprise Portal” on page 47.
4. Install the Tivoli Storage Manager monitoring agent on each of the Tivoli Storage Manager servers where you plan to configure a monitoring agent instance to run. See “Installing a reporting and monitoring agent” on page 48.

Tip: This process is the best practice if you want the Tivoli Storage Manager reporting and monitoring server to receive information about more than 10 Tivoli Storage Manager servers.

When you have less than 10 Tivoli Storage Manager servers to monitor, use the Tivoli Storage Manager monitoring agent that is already installed on your Tivoli Monitoring server to get information from the Tivoli Storage Manager servers.

5. Create and configure each Tivoli Storage Manager monitoring agent instance using the Manage Tivoli Enterprise Monitoring Services application on the Tivoli Storage Manager server. See “Creating and configuring the reporting and monitoring agent instance” on page 51.

6. Configure the data source for the monitoring agent instance using the Tivoli Integrated Portal. See “Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal” on page 52.

Configuring the Tivoli Enterprise Portal server

Configure the Tivoli Enterprise Portal server so that you can collect and view historical data.

Tivoli Enterprise Portal allows you to monitor real-time data. By default, the Tivoli Enterprise Portal server is configured for you to monitor the real-time data. You do not have to do anything with the server to be able to view the real-time data in the portal.

Before starting these steps, ensure that DB2 is started. Complete the following steps:

1. Check the lower-right corner of your Desktop, you should see either a red or green dot. If it's green, DB2 is running.
2. If it's red, right-click on the red dot and select **Start DB2**.

You must configure the portal server to send the historical data to the IBM Tivoli Data Warehouse database, so you can view the historical data.

Complete the following steps to configure and start the portal server:

1. Click **Start** → **Programs** → **IBM Tivoli Monitoring** → **Tivoli Enterprise Monitoring Services**.
2. Right-click **Tivoli Enterprise Portal Server** and select **Reconfigure**. The Connection Information window opens.
3. Click **OK** to open the Configure Tivoli Enterprise Portal Server window.
4. Click **Yes** to the question, **Do you want to reconfigure the warehouse connection information**.
5. The Warehouse Proxy Database Selection window opens. Select **DB2** and click **OK**.
6. Type the following passwords in the password fields:
 - a. The **DB2 admin ID** db2admin
 - b. The **TEPS DB user ID** itmuser
 - c. The **Warehouse DB user ID** itmuser
7. The message: **Successfully Configured warehouse data source** displays. If you do not receive this message, you did not enter the correct passwords. Check your passwords and re-enter them.
8. Click **OK** when the Common Event Console Configuration window opens.
9. Click **OK** to return to the Tivoli Enterprise Monitoring Services window.
10. Double-click on **Tivoli Enterprise Portal** to start the portal. You can select the Desktop or the Browser.
11. Once the **Tivoli Enterprise Portal** opens, select the **Accept this certificate permanently** option in the Security Alert window.

After configuring the portal, continue to the section on configuring the Tivoli Data Warehouse. See Related tasks.

Related tasks

“Configuring Tivoli Data Warehouse”

Configuring Tivoli Data Warehouse

After installing the Tivoli Storage Manager reporting and monitoring feature and configuring the Tivoli Enterprise Portal server, you must manually configure the IBM Tivoli Data Warehouse for historical reporting.

Ensure that you have configured the Tivoli Enterprise Portal server before completing this task.

To configure Tivoli Data Warehouse for historical reporting, complete the following steps:

1. To start the Tivoli Enterprise Monitoring Services application, click **Start → All Programs → IBM Tivoli Monitoring → Manage Tivoli Monitoring Services**.
2. Right-click the **Warehouse Proxy** and click **Reconfigure**.
3. Click **OK** when both windows titled Agent Advanced Configuration open.
4. Click **Yes** to **Would you like to configure your IBM Warehouse ODBC data source**.
5. In the Warehouse Proxy Database Selection window, accept the default, **DB2**, as the type of database to use and click **OK**. There are other choices listed, but DB2 is the database that is required for the Tivoli Storage Manager reporting and monitoring feature.
6. In the Configure DB2 Data Source for Warehouse Proxy window, keep the default name in the **Database Name** field. The default value is **Warehouse**.
7. Enter the DB2 database administrator user's name and password in the **Admin User ID** and **Admin Password** fields to access the DB2 database. The default user ID is **db2admin**.
8. Enter the user ID and password for the Warehouse data source connection in the **Database User ID** and **Database Password** fields and click **OK**. The default for this user ID is **ITMUser**.

To complete historical data setup continue to the section on configuring and activating the summarization and pruning agent. See Related tasks.

Related tasks

“Configuring and activating the Warehouse Summarization and Pruning agent”

Configuring and activating the Warehouse Summarization and Pruning agent

After installing the Tivoli Storage Manager reporting and monitoring feature, you must configure and activate the summarization and pruning agent to accumulate and monitor historical data.

Many of the historical reports for Tivoli Storage Manager that are stored in the Tivoli Data Warehouse must have the Warehouse Summarization and Pruning agent configured and started. Complete the following steps in the Tivoli Enterprise Monitoring Services application:

1. To start the Tivoli Enterprise Monitoring Services application, click **Start → All Programs → IBM Tivoli Monitoring → Manage Tivoli Monitoring Services**.
2. Right-click **Warehouse Summarization and Pruning Agent** and select **Reconfigure** from the list.

If **Reconfigure** is not available, double-click **Warehouse Summarization and Pruning Agent** in the Manage Tivoli Monitoring Services application, which starts the initial configuration wizard.

3. Click **OK** on the Primary TEMS Connection and Advance Configuration windows.
4. Click **Yes** to **Would you like to configure this Summarization and Pruning Agent**.
5. In the Configure Summarization and Pruning Agent window, complete the following tasks:
 - a. In the **JDBC Drivers** field, ensure the correct drivers are listed.
 - b. In the **Database** field, take DB2 as the default.
 - c. In the **Warehouse URL** field, the value of the IP address must meet the following criteria:
 - This URL should be similar to this example: jdbc:db2://ip-address:50000/WAREHOUS.
 - The IP address can be an IP address, a host name, or LOCALHOST.
 - d. 50000 is the default DB2 port number.
 - e. The default Tivoli Warehouse database name is WAREHOUS, which is the default used when installing the Tivoli Storage Manager reporting and monitoring feature.
 - f. In the **Warehouse Driver** field, ensure the driver name is correct.
 - g. In the **Warehouse User** field, use ITMUser, which is the default user ID.
 - h. In the **Warehouse Password** field, enter the password that you specified for the Tivoli Data Warehouse during the IBM Tivoli Monitoring installation.
 - i. Click **Test database connection** to test the connection. If everything is set up correctly, a message is issued that the database connection was successful. If the setup was not successful, an error message is issued. Click **OK** to close this message.
 - j. In the **TEP Server Host** field, accept the default localhost.
 - k. In the **TEP Server Port** field, accept the default server port or enter a different port number.
 - l. Select the **Scheduling** tab at the top the Summarization and Pruning window. From this window, select **Flexible**. In the **Run every field**, set the number of minutes. The default value is 60. As you use the reporting feature, you can change this value as needed.
 - m. Click **Save** → **Close** to close the Configure Summarization and Pruning Agent window.
6. Start the agent by double-clicking **Warehouse Summarization and Pruning Agent**.

Next, configure the historical data collection in order to start collecting historical data.


Related tasks

“Configuring historical data collection using the Tivoli Enterprise Portal” on page 47

Configuring historical data collection using the Tivoli Enterprise Portal

Historical data collection requires accumulating historical data after installing the Tivoli Storage Manager reporting and monitoring feature and configuring the Tivoli Storage Manager monitoring agent.

Historical data collection is collected in the Tivoli Enterprise Portal. If you do not start collecting your historical data, you cannot see any historical reports. Use the following steps to start your data collection.

1. Click **Start** → **Programs** → **IBM Tivoli Monitoring** → **Tivoli Enterprise Portal** or click the Tivoli Enterprise Portal icon on the desktop.
2. The Logon window opens. In the **Logon ID** field, enter sysadmin. In the **Password** field, enter the password that you specified for Tivoli Enterprise Portal during the Tivoli Storage Manager reporting and monitoring feature installation. Click **OK**.
3. The Tivoli Enterprise Portal opens. Expand **Window Systems** → *Server Name* → **Tivoli Storage Manager** in the **Navigator** view. The names of the monitoring workspaces are displayed.
4. Click **History Configuration**  on the top menu of the portal window. Icons at the top of the menu appear only when **ViewToolbars** is checked. Otherwise, use **Edit** → **History Configuration**.
5. The History Collection Configuration window opens. Complete the following steps in this window:
 - In the **Select a product** field, select **Tivoli Storage Manager**.
 - All the Tivoli Storage Manager attribute groups are displayed. Select all these groups.
 - In the **Collection interval** field, set the value to 60 minutes.
 - In the **Collection location** field, select Tivoli Enterprise Monitoring Server, **TEMS**. This server is where the historical data files are stored.
 - In the **Warehouse interval** field, select **1 day** for how often you want the warehouse to store data.
 - In the **Summarization** field, choose **Yearly, Monthly, Weekly, Quarterly, Daily** and **Hourly** for the summarization and levels of data that you want to keep.
 - In the **Pruning** field, choose the following values:
 - **Yearly** for **keep:** and enter **1** and select **year**.
 - **Quarterly** for **keep:** and enter **1** and select **quarterly**.
 - **Monthly** for **keep:** and enter **1** and select **monthly**.
 - **Weekly** for **keep:** and enter **1** and select **weekly**.
 - **Daily** for **keep:** and enter **1** and select **daily**.
 - **Hourly** for **keep:** and enter **1** and select **hourly**.
 - Select **Configure groups** to configure all selected groups.
 - To start the data collection on all the configured groups, select all the Tivoli Storage Manager data groups. Click **Start collection**. Data collection is collected every 15 minutes and stored hourly in the warehouse.
 - Click **Close** to save your configurations and close this window.

Important: These settings are examples. Your selections depend on how you want to collect and prune your data. To test your data that is collected, start with a short interval. Once you know the data is being collected correctly, you

can adjust the collection interval for production data. Depending on the intervals that you chose, it can be a few days before your data is available for reports.

For more details on the collection parameters and how they affect the Tivoli Storage Manager server, see the *Tivoli Common Reporting and Tuning* white paper on the Tivoli Storage Manager Wiki. Tivoli Common Reporting Configuration and Tuning, V6.1 white paper

6. Exit the Tivoli Enterprise Portal.

Installing a reporting and monitoring agent

You can install the Tivoli Storage Manager reporting and monitoring agent on any remote Tivoli Storage Manager server where you want a single instance of the agent running.

The Tivoli Storage Manager reporting and monitoring agent gathers data and sends it to the Tivoli Monitoring server. By installing a single instance of the agent on the Tivoli Storage Manager server, instead of the monitoring server, you avoid increases in memory requirements on the monitoring server.

To use the reporting and monitoring agent in an existing Tivoli Monitoring environment, you must install the reporting and monitoring agent on the existing Tivoli Enterprise Monitoring Server. You can install the reporting and monitoring agent on any Tivoli Monitoring server, but it must be on the Tivoli Enterprise Monitoring Server, as this server controls the reporting and monitoring agent.

Attention: The reporting and monitoring feature is only supported with the IBM Tivoli Monitoring, **version 6.2 FP1**, or higher level. See “System requirements for Tivoli Storage Manager reporting and monitoring” on page 38 for other supported software and hardware.

Complete the following steps to create and configure your reporting and monitoring agent:

1. Install the reporting and monitoring agent:
 - To install the reporting and monitoring agent on the Tivoli Storage Manager server, go to the following topic: “Installing a reporting and monitoring agent on a Tivoli Storage Manager server” on page 49
 - To install the reporting and monitoring agent in an existing Tivoli Monitoring environment, go to the following topic: “Installing a reporting and monitoring agent on an existing IBM Tivoli Monitoring server” on page 49
2. Create and configure the reporting and monitoring agent instance:
 - “Creating and configuring the reporting and monitoring agent instance” on page 51
3. Configure the data source:
 - “Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal” on page 52

Installing a reporting and monitoring agent on a Tivoli Storage Manager server

Once you have installed the reporting and monitoring feature, you can install the reporting and monitoring agent on any remote Tivoli Storage Manager server where you want a single instance of the agent running.

The reporting and monitoring agent gathers data and sends it to the Tivoli Monitoring server. By installing a single instance of the agent on the Tivoli Storage Manager server, instead of the Tivoli Monitoring server, you avoid increases in memory requirements on the monitoring server.

To install the Tivoli Storage Manager reporting and monitoring agent on the Tivoli Storage Manager server, complete the following steps:

1. Insert the reporting and monitoring feature DVD into the DVD drive. The reporting and monitoring installation wizard starts.
2. Accept each license agreement presented to proceed. Click **Next**.
3. On the **Component Selection** page, select only **Tivoli Storage Manager reporting and monitoring agent**. Click **Next**.
4. Follow the wizard instructions for installation location, and languages and encryption. You must use the encryption key that you entered during installation of the monitoring server for each separate agent that you install on any Tivoli Storage Manager server.
5. Enter the password for the Tivoli Enterprise Management Server and click **Next**.
6. You are presented with the installation summary of your configuration. Select one of the following tasks:
 - To start the installation, click **Next**.
 - To make corrections or changes, click **Previous**.

At the end of the installation, the Installation Results page displays a message with the installation results. If there were any errors during the installation, the summary panel lists the errors and directs you to an error log file.

7. Click **Finish**.

You must configure a reporting and monitoring agent instance. After configuring the reporting and monitoring agent instance, you must also configure the data source that the reporting and monitoring agent instance uses. This data source gives you the ability to view the historical reports using the Administration Center.

Installing a reporting and monitoring agent on an existing IBM Tivoli Monitoring server

You can install a reporting and monitoring agent on an existing IBM Tivoli Monitoring server.

You must have the following components installed in order to use a reporting and monitoring agent in an existing Tivoli Monitoring environment. Once you have installed the reporting and monitoring agent on the appropriate components, you have to configure the components, if you have not already done so.

- The Tivoli Enterprise Monitoring server.
- The Tivoli Enterprise Portal server
- The warehouse summarization and pruning agent
- The warehouse proxy agent

If any of these components are on separate systems, you must install and configure the reporting and monitoring agent on each of those systems. See the Related Tasks section for further instructions.

Attention: The reporting and monitoring feature is only supported with the IBM Tivoli Monitoring, **version 6.2 FP1**, or higher level. See “System requirements for Tivoli Storage Manager reporting and monitoring” on page 38 for other supported software and hardware.

To install the reporting and monitoring agent on an existing Tivoli Monitoring environment, complete the following steps:

1. Insert the reporting and monitoring feature DVD into the DVD drive. The reporting and monitoring installation wizard starts.
2. Accept each license agreement presented to proceed. Click **Next**.
3. On the **Component Selection** page, select only **Tivoli Storage Manager reporting and monitoring agent**. Click **Next**.
4. Follow the wizard instructions for installation location, and languages and encryption. You must use the encryption key that you entered during installation of the monitoring server for each separate agent that you install on any Tivoli Storage Manager server.
5. Enter the password for the Tivoli Enterprise Management Server and click **Next**.
6. You are presented with the installation summary of your configuration. Select one of the following tasks:
 - To start the installation, click **Next**.
 - To make corrections or changes, click **Previous**.

At the end of the installation, the Installation Results page displays a message with the installation results. If there were any errors during the installation, the summary panel lists the errors and directs you to an error log file.

7. Click **Finish**.

You must configure a reporting and monitoring agent instance. After configuring the reporting and monitoring agent instance, you must also configure the data source that the reporting and monitoring agent instance uses. This data source gives you the ability to view the historical reports using the Administration Center.

Related tasks

“Configuring the Tivoli Enterprise Portal server” on page 44

“Configuring Tivoli Data Warehouse” on page 45

“Configuring and activating the Warehouse Summarization and Pruning agent” on page 45

“Configuring historical data collection using the Tivoli Enterprise Portal” on page 47

Creating and configuring the reporting and monitoring agent instance

After installing the reporting and monitoring agent, you must manually create and configure a reporting and monitoring agent instance for historical reporting.

To monitor multiple Tivoli Storage Manager servers from the same Tivoli Monitoring server, create an instance of the reporting and monitoring agent using the following method for each Tivoli Storage Manager server you want to monitor. If you install the reporting and monitoring agent on your Tivoli Storage Manager server, you do this task once, for the Tivoli Storage Manager server where the reporting and monitoring agent is installed.

If you are installing a reporting and monitoring agent on an existing IBM Tivoli Monitoring server, you must configure the Tivoli Enterprise Monitoring Server, the Tivoli Enterprise Portal Server, the Tivoli Enterprise Portal, and the data warehouse components. If any of these components are on a separate system, install a reporting and monitoring agent on each of those systems and configure the component to communicate with the reporting and monitoring agent. See “Installing a reporting and monitoring agent on an existing IBM Tivoli Monitoring server” on page 49.

To configure the reporting and monitoring agent instance for historical reporting, log on to Tivoli Enterprise Monitoring Services by completing the following steps:

1. Click **Start → All Programs → IBM Tivoli Monitoring → Manage Tivoli Monitoring Services**.
2. In the Manage Tivoli Enterprise Monitoring Services - TEMS Mode window, double-click **Monitoring Agent for Tivoli Storage Manager**.
3. In the Input window, enter the instance name and click **OK**.
4. In the Agent Configuration window, complete the following fields for the Tivoli Storage Manager server to be monitored:
 - a. In the **Server Address** field, enter the server address for the Tivoli Storage Manager server.
 - b. In the **Port Number** field, enter the port number that is used to communicate with the Tivoli Storage Manager server.
 - c. In the **TSM Administrator** field, enter the Tivoli Storage Manager administrator ID used to access the Tivoli Storage Manager server.
 - d. In the **TSM Administrator Password** field, enter the password, twice for the Tivoli Storage Manager administrator ID.
 - e. Click **OK** to save the settings.
5. The Manage Tivoli Enterprise Monitoring Services page opens with the new reporting and monitoring agent instance. **Task/Subsystem** has the unique instance name for the reporting and monitoring agent that you configured. Start the reporting and monitoring agent instance by completing one of the following tasks:
 - In the Manage Tivoli Enterprise Monitoring Services window, select the reporting and monitoring agent instance that you want to start. Click the green light icon in the toolbar at the top of the window.
 - If you do not have the toolbar enabled, double-click the reporting and monitoring agent instance in the list. This toggles the **service/application** field to **Stopped** or **Started** status.
6. Configure the data source for the reporting and monitoring agent instance. This data source allows you to view the historical reporting.

- “Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal”

Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal

To view historical reports using the Administration Center, configure the data source.

You must configure the data sources for historical reporting. Configuring a data source for one report propagates throughout all the historical reports that are available through the Tivoli Storage Manager reporting and monitoring feature. To configure a data source, using the Administration Center, complete the following steps:

1. Before accessing the Administration Center, ensure that the Tivoli Integrated Portal server is running by completing the following commands from a command line:

```
cd <TIP_home>\profiles\TIPProfile\bin
startServer.bat server1 -user tipuser -password tippassword
```

 where *TIP_home* is the default directory where you installed the Administration Center.
2. To open the Tivoli Integrated Portal window, open a Web browser and enter the following address: `http://hostname:port`
 where *port* is the port number that is specified when you installed the Tivoli Integrated Portal. The default is 16310.
 If you are using a remote system, you can access the Tivoli Integrated Portal by entering the IP address or fully qualified host name of the remote system. You might have to authenticate to the remote system if there is a firewall that exists.
3. In the **User ID** field, enter the Tivoli Integrated Portal user ID that was defined when you installed the Tivoli Storage Manager Administration Center.
4. In the **Password** field, enter the Tivoli Integrated Portal password you defined for the user ID and click **Log in**.
5. On the left side of the window, expand and click **Reporting → Common Reporting**.
6. After the Tivoli Common Reporting window opens, select **Tivoli Products → Tivoli Common Reporting**.
7. Select one of the reports, right click, and select **Data Sources** from the menu.
8. Select the first data source and click **Edit**.
9. The Report Data Sources window opens. The fields are populated with the following values:
 - a. In the **Display Name** field, DB2 WAREHOUS is the name for the IBM Tivoli Data Warehouse data source.
 - b. In the **User ID** field, ITMuser is the user ID.
 - c. In the **Password** field, enter the password that you defined for the user ID.
 - d. In the **JDBC Driver** and the **JDBC URL** fields, is the information that matches your JDBC information. Click **Save**.
 - e. Exit the Report Data Sources window.
10. The Reports window opens. To test the data, select a report, right-click **View As → HTML** or **PDF**.

11. Depending on the report you have selected to test, complete the fields indicating the data that the report needs to contain.
12. Click **Run**. The selected report displays.
13. Click **Log out** to end the session.

Installing software for custom reporting

The Tivoli Storage Manager reporting and monitoring feature does not have an option to create custom reports for Tivoli Storage Manager. You can create your own reports using the Business Intelligence and Reporting Tools (BIRT) software.

Ensure that you have fulfilled the IBM JDK/JRE requirements listed in the software requirements section for installing optional software. See “System requirements for Tivoli Storage Manager reporting and monitoring” on page 38

To create your own custom reports using BIRT and Tivoli Common Reporting from your data that is stored in Tivoli Data Warehouse, complete the following steps:

1. Download and install BIRT, version 2.2.1, All-In-One software using one of the following Web sites:
 - Go to the following IBM Tivoli Open Process Automation Library (OPAL) Web site for the BIRT software that you need to download and install: BIRT Report Designer, v2.2.1, for Tivoli Common Reporting
 - If you cannot access OPAL, go to the following BIRT Web site: BIRT Report Downloads
2. Import the data, configure the data source, and customize the reports following the directions in the *Customizing Tivoli Common Reporting Report Designs* document found at:
Customizing Tivoli Common Reporting Report Designs

Related information

 [Tivoli Common Reporting Information Center](#)

Uninstalling the Tivoli Storage Manager reporting and monitoring feature

You can uninstall the Tivoli Storage Manager reporting and monitoring feature using a GUI or the command line.

Uninstalling the Tivoli Storage Manager reporting and monitoring feature

Before you uninstall the Tivoli Storage Manager reporting and monitoring feature, there are several tasks you must perform.

Before starting the reporting and monitoring uninstall wizard, stop all agents from the Tivoli Enterprise Monitoring Server. To stop the agents, complete the following steps:

1. Go to **Start** → **Programs** → **IBM Tivoli Monitoring** → **Manage Tivoli Enterprise Monitoring Services**.
2. In the Manage Tivoli Enterprise Monitoring Services window, stop the agents by double-clicking the agents that are started (running). If the toolbar is enabled, you can also click the green light to stop the agents.

There are two ways to uninstall the reporting feature, using the Add/Remove method or using the command-line method.

To use the Add/Remove method, complete the following steps:

1. **Start → Control Panel → Add / Remove Programs**
2. Select Tivoli Storage Manager reporting and monitoring.
3. Follow the menus to uninstall the software.

The Tivoli Storage Manager reporting and monitoring feature might disappear from the **Add / Remove Programs** menu. If it does and you still have some of the reporting components on your system, complete the following steps to manually remove those individual components:

1. Go to **Start → Control Panel → Add / Remove Programs**
2. Remove the reporting and monitoring agent by completing the following steps:
 - a. Select **IBM Tivoli Monitoring for storage**.
 - b. Select **Change/Remove** and follow the prompts to remove it.
3. Remove the reporting and monitoring server by completing the following steps:
 - a. Select **IBM Tivoli Monitoring**
 - b. Select **Change/Remove** and follow the prompts to remove it.
4. Remove DB2 by completing the following steps:
 - a. Select **DB2**.
 - b. Select **Change/Remove** and follow the prompts to remove it.

CAUTION:

By removing these database files, you remove any database data and all the files stored under this directory.

5. Remove the deployment engine and its database by completing the following steps:
 - a. Open a command prompt: **Start → Run → Cmd**
 - b. Change directories: `cd C:\Program Files\IBM\common\acsi\jre\bin`
 - c. Run the following command:
`..\..\bin\si_inst.bat -r -f`
6. Remove the installation directory. For example: **C:\IBM**.
7. Remove the **C:\Program Files\IBM\common\acsi** directory.
8. Reboot your system.

To use the command-line method, complete the following steps:

1. Open a browser.
2. Go to the directory `<install_dir>_uninst` where the `install_dir` is the location you selected to install the Tivoli Storage Manager reporting and monitoring feature. Example: **C:\IBM**
3. Run the following command:
`Uninstall Tivoli Storage Manager for Reporting and Monitoring.exe`
4. Follow the menus to uninstall the software.

Chapter 5. Installing and configuring the Administration Center

Use the Administration Center to administer Tivoli Storage Manager and the reporting and monitoring feature from a supported browser anywhere in your network.

The time required to install the Tivoli Integrated Portal and Administration Center depends on the speed of your processor and the memory in your machine. Use the following steps to install the Tivoli Integrated Portal and Administration Center.

If you are upgrading the Administration Center, see Chapter 8, “Upgrading the Administration Center,” on page 75.

1. Install your Tivoli Storage Manager Version 6.2 servers. See Chapter 2, “Installing Tivoli Storage Manager,” on page 11. Give each server a unique name.
2. Start your Tivoli Storage Manager Version 6.2 server. See “Starting the server instance” on page 29.
3. Download and install the Administration Center. See “Installing the Administration Center” on page 56.
4. Verify the Administration Center installation. See “Verifying your installation” on page 60.
5. Define your Tivoli Integrated Portal users. See “Defining Administration Center users to the Tivoli Integrated Portal” on page 62.
6. Add connections for the Tivoli Storage Manager servers that you want to manage. See “Server connections to the Administration Center” on page 78.

Administration Center system requirements

The Tivoli Storage Manager server can require a large amount of memory, network bandwidth, and processor resources. In many cases, the server performs best when other applications are not installed on the same system. If the system meets the combined requirements for the server and the Administration Center, it can support both applications.

If you plan to use the Administration Center to manage an environment with a large number of servers or administrators, consider installing the Administration Center on a separate system.

For Administration Center system requirements, see the following Web site:
<http://www.ibm.com/support/docview.wss?uid=swg21410467>.

Important: The following platform is supported for Tivoli Integrated Portal Version 1.1.1.2 and the Administration Center for Tivoli Storage Manager Version 6.2:

- Windows (32-bit and 64-bit)

Installing the Administration Center

To install the Administration Center, you can use the graphical installation wizard, the console wizard, or the command line in silent mode.

Using the Administration Center installation software, install the Tivoli Storage Manager Administration Center.

1. If you are installing the Administration Center using the DVD, complete the following steps:
Log on as an administrator. Insert the Tivoli Storage Manager Administration Center DVD. Use Windows Explorer to go to the DVD drive, double-click the DVD, and then double-click `install.exe`. To access Windows Explorer, go to **Start** → **Programs** → **Accessories** or right-click **Start**. The DVD browser window opens.
2. If you are installing the Administration Center from the Tivoli Storage Manager FTP downloads site, obtain the package file here: `ftp://ftp.software.ibm.com/storage/tivoli-storage-management/maintenance/admincenter/`. Change to the directory where you placed the executable file and complete the following steps:

Tip: The files are extracted to the current directory. Ensure that the executable file is in the directory where you want the extracted files to be located.

Either double-click the following executable file or enter the following command on the command line to extract the installation files.

`6.2.0.0-TIV-TSMAC-platform.exe`

where *platform* denotes the operating system that the Administration Center is to be installed on.

3. Select one of the following ways of installing the Administration Center:

Installation wizard

“Installing the Administration Center using the installation wizard”

Command-line console wizard

“Installing the Administration Center using the console installation wizard” on page 57

Silent mode

“Installing the Administration Center in silent mode” on page 58

Installing the Administration Center using the installation wizard

Using the installation wizard is one method of installing the Administration Center.

To install the Administration Center using the installation wizard, complete the following steps:

1. To start the wizard, enter the following command:
`install.exe`
Or, double-click the `install.exe` file. The Administration Center installation wizard starts.
2. Select the language for your installation and follow the prompts. You must accept the license agreement to proceed. Select the Administration Center

component. Selecting the default option installs the required components for the Administration Center. The advanced option provides additional components that you can select.

After you select the Administration Center component, you are prompted for a Tivoli Integrated Portal user name and password. The default Tivoli Integrated Portal user name is `tipadmin` and you must specify a password for this ID, or for a new ID you create. You will use these later to log onto the Tivoli Integrated Portal and Administration Center.

Important: Save the user name and password or you are unable to uninstall the Administration Center.

You can create additional Tivoli Integrated Portal user IDs and passwords for any other administrators who will access the Administration Center.

At the end of the installation, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. Ensure that you make a note of the port number listed in the summary panel because it might be different from the one you originally entered in the wizard, depending on port availability and your system requirements. You will need this port to log on to the Administration Center. Using the correct port is essential so that the various Administration Center operations can function properly.

If there were any errors during the installation, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the following location:

The directory that was chosen for installation (look for the file `log.txt`).

Installing the Administration Center using the console installation wizard

Using the console installation wizard is one method of installing the Administration Center.

To install the Administration Center using the console installation wizard, complete the following steps:

1. To start the wizard, enter the following command:

```
install.exe -i console
```

2. Select the language for your installation and follow the prompts. You must accept the license agreement to proceed. Select the Administration Center component. Selecting the default option installs the required components for the Administration Center. The advanced option provides additional components that you can select.

After you select the Administration Center component, you are prompted for a Tivoli Integrated Portal user name and password. The default Tivoli Integrated Portal user name is `tipadmin` and you must specify a password for this ID, or for a new ID you create. You will use these later to log onto the Tivoli Integrated Portal and Administration Center.

Important: Save the user name and password or you are unable to uninstall the Administration Center.

You can create additional Tivoli Integrated Portal user IDs and passwords for any other administrators who will access the Administration Center.

At the end of the installation, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. Ensure

that you make a note of the port number listed in the summary panel because it might be different from the one you originally entered in the wizard, depending on port availability and your system requirements. You will need this port to log on to the Administration Center. Using the correct port is essential so that the various Administration Center operations can function properly.

If there were any errors during the installation, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the following location:

The directory that was chosen for installation (look for the file log.txt).

Installing the Administration Center in silent mode

Completing a silent installation is one method of installing the Administration Center.

See the sample response files (sample_response.txt) for more details about the variables. These files are located in the Tivoli Storage Manager installation media root directory. To start the silent installation, enter the following command on a single line:

```
install[.sh|.exe] -i silent -f path_name_to_response_file
```

Ensure that you enter the full path name to the sample response file.

Tip: After you start the silent installation, it immediately closes the foreground window and runs in the background. To receive a return code from the silent installation, run it using a batch script. See “Installing silently using a batch script” on page 15 for more details.

Update the LICENSE_ACCEPTED variable to accept the Tivoli Integrated Portal Version 1.1.1.2 and Tivoli Storage Manager Administration Center license agreements. If the LICENSE_ACCEPTED variable is anything other than true, the installation ends and no log is produced. By removing the # sign before #LICENSE_ACCEPTED=false and changing false to true #---- you are accepting the Tivoli Integrated Portal Version 1.1.1.2 and Tivoli Storage Manager Administration Center license agreements.

```
LICENSE_ACCEPTED=true
```

Define the installation location. To reuse an instance of Tivoli Integrated Portal, point to its existing installation location. For example:

```
USER_INSTALL_DIR=C:\\IBM\\tivoli\\AC
```

Do not define the IAGLOBAL_WUI_HOME, #---- variable unless you are upgrading an existing Tivoli Integrated Portal installation. Comment it out by placing # signs in front of the hyphens: #---- #----.

```
IAGLOBAL_WUI_HOME=C:\\Program Files\\IBM\\WebSphere\\  
UpdateInstaller#----#----
```

If you are upgrading an existing Tivoli Integrated Portal, complete a backup first. After the backup is done, issue the following command:

```
IAGLOBAL_BACKUP_PROCEDURE_DONE=true
```

Select reuse if you want to use an existing Tivoli Integrated Portal location.

```
IAGLOBAL_INSTALL_LOCATION_SELECTION=create|reuse
```

```

CHOSEN_INSTALL_SET=default|advanced
ESSServer is (IAGLOBAL_AUTHENTICATION_SVC_SELECTION=YES)
CHOSEN_INSTALL_SET=advanced
IAGLOBAL_AUTHENTICATION_SVC_SELECTION=YES
IAGLOBAL_USER_REGISTRY_LDAP_SELECTED=false
WAS_INFO note

```

The WASPortsCreationAction creates all the ports.

```

IAGLOBAL_WASUserID=tipadmin
IALOCAL_WASPassword=TIP_pw
IAGLOBAL_WC_defaulthost=16310
IAGLOBAL_WC_defaulthost_secure=16311
IAGLOBAL_BOOTSTRAP_ADDRESS=16312
IAGLOBAL_SOAP_CONNECTOR_ADDRESS=16313
IAGLOBAL_WC_adminhost=16315
IAGLOBAL_WC_adminhost_secure=16316
IAGLOBAL_DCS_UNICAST_ADDRESS=16318
IAGLOBAL_ORB_LISTENER_ADDRESS=16320
IAGLOBAL_SAS_SSL_SERVERAUTH_LISTENER_ADDRESS=16321
IAGLOBAL_CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS=16322
IAGLOBAL_CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS=16323

```

The VMM configuration values are FILE_BASED|LDAP. Enter either this variable:

```
IAGLOBAL_DEFAULT_USER_REGISTRY_SELECTION=FILE_BASED
```

Or these variables:

```

IAGLOBAL_USER_REGISTRY_LDAP_SELECTED=true
IAGLOBAL_LDAP_PRIMARY_USER=tipadmin
IALOCAL_LDAP_BIND_PASSWORD=*****
IAGLOBAL_LDAP_BASE_ENTRY="o=IBM,c=US"
IAGLOBAL_LDAP_BIND_DN="cn=root"
IAGLOBAL_LDAP_GROUP_ENTITY=Group
IAGLOBAL_LDAP_GROUP_SUFFIX="o=IBM,c=US"
IAGLOBAL_LDAP_NAME="rhelvm1.tivlab.raleigh.ibm.com"
IAGLOBAL_LDAP_ORG_ENTITY=OrgContainer
IAGLOBAL_LDAP_ORG_SUFFIX="o=IBM,c=US"
IAGLOBAL_LDAP_PORT=389
IAGLOBAL_LDAP_REPOSITORY_ID=rhelvm1
IAGLOBAL_LDAP_USER_ENTITY=PersonAccount
IAGLOBAL_LDAP_USER_SUFFIX="o=IBM,c=US"

```

During the silent installation, the following items are automatically checked:

- WASUserID - This user ID must be privileged. If the user name is new, installation continues.
- WASPassword - If the user name exists, the installation validates the credentials. If the user name is new, the password is checked to ensure that it meets the Windows password-complexity requirements. This variable is not encrypted.

If either of these checks fails, the silent installation stops with a warning message.

If there were any errors during the installation, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the following location:

The directory that was chosen for installation (look for the file log.txt).

Verifying your installation

After installing the Administration Center, complete several procedures to verify your installation.

Complete the following steps:

1. Start the Administration Center by entering one of the following addresses in a supported Web browser:

`http://workstation_name:port/`

Or:

`https://workstation_name:port/ibm/console`

The *workstation_name* is the network name or IP address of the workstation on which you installed the Administration Center and the *port* is the Web administration HTTP or HTTPS port number.

Attention: Ensure that you are using the same port that was displayed in the summary panel of the wizard after you completed the Administration Center installation. Because of system resources and availability of certain ports on your workstation, this might be a different number from the port you had entered into the wizard in a previous panel. You will not receive any warning messages that you are using an incorrect port, and might even be able to complete some Administration Center tasks with a different port. To save time and resources, ensure that you use the intended port.

The default Web administration port (HTTP) is 16310. The default secure Web administration port (HTTPS) is 16316. If you are using a different port number from the default, the secure port typically appears with 6 as the last number.

Look in the following file if you want to see the port that is being used. In this file, **WC_defaulthost** contains the variable for the HTTP port and **WC_adminhost_secure** contains the variable for the HTTPS port.

`TIP_HOME\properties\TIPPortDef.properties`

where *TIP_HOME* is the root directory for the Tivoli Storage Manager installation.

The default for *TIP_HOME* is C:\IBM\AC.

Tip: If you use `http://workstation_name:16310/` to connect to the Administration Center, you are redirected to the secure port and address (`https://workstation_name:16316/ibm/console`).

To start the Administration Center using the default ports, for example, enter one of the following addresses in a supported Web browser:

`http://workstation_name:16310/`

Or:

`https://workstation_name:16316/ibm/console`

2. To get started, log in, using the Tivoli Integrated Portal user ID and password that you created during the Administration Center installation. Save this password in a safe location because you need it not only to log in but also to uninstall the Administration Center.
3. After you successfully log in, the Tivoli Integrated Portal welcome page is displayed. Expand the Tivoli Storage Manager folder in the **Work Items** list and click **Getting Started** to display the Tivoli Storage Manager welcome page. This page provides instructions for using the Administration Center.

Starting and stopping the Tivoli Integrated Portal server

The IBM Tivoli Integrated Portal server is automatically started after a successful installation. If you shut down the system after the initial installation, any Tivoli Integrated Portal servers that were started are stopped.

Use the Windows Services utility or the command line to start and stop Tivoli Integrated Portal servers.

Tip: Start and stop the Tivoli Integrated Portal server by using the Windows Services utility if you are connecting to the production environment through Terminal Services. If you start the Tivoli Integrated Portal server from the command line, the Tivoli Integrated Portal server stops when you log off the Terminal Services session.

To start or stop Tivoli Integrated Portal system servers using the Windows Services utility, go to **Settings** → **Control Panel** → **Administrative Tools** → **Services**. Select the following Tivoli Integrated Portal service:

- Tivoli Integrated Portal - TIPProfile_Port_port

where *port* is the port number that you entered earlier. Ensure that you have the correct port number based on the information in the wizard summary panel. The default Web administration port (HTTP) is 16310. The default secure Web administration port (HTTPS) is 16316. If you are using a different port number from the default, the secure port typically appears with 6 as the last number. See “Verifying your installation” on page 60 for more details.

When you start and stop the Tivoli Integrated Portal using the command line, the variables in the commands have these meanings:

- *TIP_HOME* is the root directory for the Tivoli Storage Manager installation.
The default for *TIP_HOME* is C:\IBM\AC.
 - *tip_admin* is the administrator user ID for the Administration Center.
 - *tip_pw* is the password for the administrator.
1. Change to the *TIP_HOME*\bin directory or a subdirectory of the Tivoli Storage Manager installation directory.
 2. Start or stop the Tivoli Integrated Portal server by issuing one of the following commands:
 - To **start** an Tivoli Integrated Portal server using the command line, issue this command:
`startServer.bat server1 -username tip_admin -password tip_pw`
 - To **stop** an Tivoli Integrated Portal server using the command line, issue this command:

```
stopServer.bat server1 -username tip_admin -password tip_pw
```

Defining Administration Center users to the Tivoli Integrated Portal

When you install the 6.2 Administration Center, you must define the users to the Tivoli Integrated Portal.

You can create a separate Tivoli Integrated Portal user ID for each Tivoli Storage Manager administrator, or for a group of administrators. As a best practice, give each Tivoli Storage Manager administrator their own Tivoli Integrated Portal administrator ID. Creating separate Tivoli Integrated Portal administrator IDs can help you control access for administrators who manage different servers, or have different privilege classes. After logging in using this ID, they can use their Tivoli Storage Manager administrator name and password to manage connections for the servers they manage.

Complete the following steps to define Administration Center users to the Tivoli Integrated Portal:

1. In the navigation tree, expand **Users and Groups**.
2. Click **Manage Users**.
3. Click **Create**.
4. Click **Group Membership**.
5. Select **Group name**, then click **Search**.
6. Add TSM_AdminCenter to the Current groups list.
7. Click **Close**. The TSM_AdminCenter group is a shell for you to populate with users. You must manually enter the user credentials.
8. Complete the form and click **Create**.

Uninstalling the Administration Center

Uninstall the Administration Center either by using one of two wizards or in silent mode.

- To uninstall the Administration Center using the standard method, complete the following steps:

1. Change to this directory: C:\IBM\AC_uninst.
2. Use one of the following methods to uninstall the Administration Center:
 - To use the installation wizard (GUI) to uninstall the Administration Center, double-click the .exe file or enter the following command:
"uninstall.exe"

Tip: Ensure that you have your Administration Center user name and password to uninstall the Administration Center.

- To use the console to uninstall the Administration Center, enter this command:
"uninstall.exe" -i console

Tip: Ensure that you have your Administration Center user name and password to uninstall the Administration Center. The uninstallation closes if your user name and password are invalid, and you must start over.

- To silently uninstall the Administration Center, issue the following command. Sample response files (uninstall_response.txt) are available

with the Administration Center installation driver. Use one of the sample files to run a silent installation. Ensure that you enter the full path name to the sample response file.

```
"uninstall.exe" -i silent -f path_name_to_response_file
```

3. Follow the prompts to uninstall the Administration Center.

- To uninstall the Administration Center using silent mode with a batch script, complete the following steps:

Tip: If you do not use a batch script, this uninstallation method immediately closes the foreground window, and runs in the background. You will not receive a return code.

1. Create a file and name it `uninstall.bat`. The file name must end with `.bat`, not `.bat.txt`.

2. Type this command into the `uninstall.bat` file and save it:

```
"uninstall.exe" -i silent
```

3. Double-click the `uninstall.bat` file or start it using a command prompt.

4. If you are using a command prompt, after the uninstallation is complete, issue the following command to retrieve the return code:

```
echo %ERRORLEVEL%
```

See Chapter 5, "Installing and configuring the Administration Center," on page 55 for the installation steps to reinstall the Administration Center.

Chapter 6. Upgrading from Tivoli Storage Manager Version 6.1

You can upgrade directly to Tivoli Storage Manager Version 6.2 from any version of Tivoli Storage Manager Version 6.1. Multiple server instances on a system all use the same installed code, so all the server instances on a system must be upgraded at the same time.

The upgrade process recreates your server instances, recatalogs the databases for each instance, and upgrades each database, using information saved from your previous installation. As a server and database are moved into Tivoli Storage Manager Version 6.2, the validity of the data is checked against constraints that are enforced in the new database.

Tip: If you are upgrading from Tivoli Storage Manager Version 6.1 to Version 6.2 and have multiple servers on your system, you only have to run the upgrade wizard once. See “Running multiple server instances on a single system” on page 32 for more information about running multiple servers.

If you are upgrading a 5.5 Tivoli Storage Manager server to Tivoli Storage Manager Version 6.2, see the *Server Upgrade Guide*.

If you are upgrading an existing Tivoli Storage Manager Version 6.2 server to a later level of Version 6.2, see Chapter 9, “Installing a Tivoli Storage Manager server fix pack,” on page 81.

To return to an earlier version of Tivoli Storage Manager, after an upgrade, you must have a full database backup of that original version and the installation code for the server of that original version.

1. Check the readme file for any special instructions or specific information for your operating system.
2. Plan for system hardware and software requirements. See Chapter 1, “Planning to install IBM Tivoli Storage Manager,” on page 1.

Restriction: You cannot upgrade your server to run on an operating system that is different from the operating system it currently runs on.

3. Back up your V6.1 server database and configuration files.
4. Make a list of your current server instances by running the following command:
 - a. Open Windows Services. Go to **Start** → **Programs** → **Administrative Tools** → **Services**
 - b. Find your existing server instances by looking for DB2-DB2TSM1 names, for example: DB2-DB2TSM1-SERVER1. Keep a record of each server name and each user ID associated with that server instance. The user ID is the name that is listed under **Log On As**.

Keep a record of the database path for each instance. Verify that the database default paths are correct before performing the upgrade.

5. Stop each server instance on the system by issuing this Tivoli Storage Manager command from an administrative command line:
`halt`
6. Ensure that no server database backup or restore operations are running.

7. Ensure that you have the user ID and password for each server instance because you need these for the upgrade.
8. Install the latest Tivoli Storage Manager server code, using a wizard or silent mode. Using one of the wizards, you are guided to perform the upgrade steps in the correct order and you are prompted for your server instance credentials. Until the new version is installed and any required licenses are registered again, clients cannot connect to the server. Ensure that the following requirements are met if you use the installation or console installation wizard for the upgrade:
 - The system must have one of the following protocols enabled. Ensure that the port that the protocol uses is not blocked by a firewall.
 - Secure Shell (SSH). Ensure that the port is set to the default value, 22.
 - Remote shell (RSH).
 - Remote Execution Protocol (REXEC).If you are running on Windows Server 2008 or Windows Vista, you might also need to disable User Account Control (at least while running this wizard). If you choose not to disable User Account Control, you must ensure that one of the other protocols is configured to allow the wizard to run. See “Using Remote Execution Protocol on Windows Vista and Windows Server 2008” on page 21 for instructions.
 - Windows server message block (SMB)
SMB is the interface used by File and Print Sharing (also known as CIFS). To use the SMB protocol, you must ensure that File and Print Sharing is enabled, and that port 445 is not blocked by your firewall.
- You must be able to log on to the system using a protocol that is enabled on the system, using either the user ID that you created for the server instance, or some other user ID that exists on the system. When using the wizard, you must provide the user ID and password to access the system.

If a connection cannot be established using SSH, RSH, or REXEC, manually upgrade the Tivoli Storage Manager server instance from Version 6.1 to 6.2. See <http://www.ibm.com/support/docview.wss?uid=swg27018195> for details.

Use one of the following methods to install the latest server code:

Installation wizard

“Upgrading Tivoli Storage Manager using the installation wizard” on page 67

Command-line console wizard

“Upgrading Tivoli Storage Manager using the console installation wizard” on page 68

Silent mode

“Upgrading Tivoli Storage Manager in silent mode” on page 69

The DB2CKUPGRADE script conducts checks and creates logs for each database. These logs contain the results of the DB2CKUPGRADE command for each database. The logs are called:

```
<installation_directory> db2ckupgrade_<instance_name>_<db_name>.log
```

The wizard automatically corrects some errors in the database during the upgrade to Version 6.2 and DB2 Version 9.7. Other errors might need to be corrected manually. See the *Problem Determination Guide* and search for DB2 log files for more details about database errors. Run the upgrade again after you fix any errors.

9. Verify that the upgrade was successful by starting the server. See “Starting the server instance” on page 29. Perform some basic operations and query information about the system to confirm that all information transferred correctly.

Upgrading Tivoli Storage Manager using the installation wizard

Using the installation wizard is one method of upgrading Tivoli Storage Manager from Version 6.1.

See Chapter 6, “Upgrading from Tivoli Storage Manager Version 6.1,” on page 65 for an overview of the upgrade steps, before starting the upgrade.

To upgrade Tivoli Storage Manager from Version 6.1, using the installation wizard, complete the following steps:

1. Select a method to start the installation wizard:

- To start the wizard without saving your responses, double-click the `install.exe` file or enter the following command:
`install.exe`
- To start the wizard and save your responses, enter the following command, and specify the `-r` option:
`install.exe -r C:\response.rsp`

The Tivoli Storage Manager installation wizard starts.

2. Select the language for your installation and follow the wizard directions, selecting **Next** to step through the wizard. You must accept the license agreement to proceed. Then, select the components that you want to install (server, languages, licenses, device driver, storage agent). There is no default so you must make a selection or you receive an error message and are returned to the components' page. The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and GSKit 7 are automatically installed when you select the server component.
 - If you previously installed a server, ensure that you select the same directory when you install a language pack, license, or device driver. If you previously installed a storage agent, ensure that you select the same directory if you return to install a device driver.
 - A server and a storage agent cannot be installed on the same workstation.

Tip: During the upgrade from Tivoli Storage Manager Version 6.1 to Version 6.2, or if you uninstall any version of Tivoli Storage Manager 6.1 or later, including a fix pack, an instance file is created. The instance file is created to help reinstall Tivoli Storage Manager. If this file exists and you start an upgrade, the upgrade might fail because the server instance cannot be created when information is retrieved from the file. Consider removing or temporarily renaming the instance file if you have old information in it, or if you get an error message after adding your credentials to the **Instance user ID** panel of the installation wizard.

You can find the instance file in the following location:

Instance.dat in the Tivoli Storage Manager server installation directory

At the end of the upgrade, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. If there

were any errors during the upgrade, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the following location:

The directory that was chosen for installation (look for the files log.txt and logs.zip).

Upgrading Tivoli Storage Manager using the console installation wizard

Using the console installation wizard is one method of upgrading Tivoli Storage Manager from Version 6.1.

See Chapter 6, “Upgrading from Tivoli Storage Manager Version 6.1,” on page 65 for an overview of the upgrade steps, before starting the upgrade.

To upgrade the Tivoli Storage Manager server from Version 6.1, using the console installation wizard, complete the following steps:

1. To start the wizard without saving your responses, enter the following command:

```
install.exe -i console
```

To start the wizard and save your responses, enter the following command, and specify the -r option:

```
install.exe -i console -r C:\response.rsp
```
2. Select the language for your installation and follow the wizard directions, selecting **Next** to step through the wizard. You must accept the license agreement to proceed. Then, select the components that you want to install (server, languages, licenses, device driver, storage agent). There is no default so you must make a selection or you receive an error message and are returned to the components' page. The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and GSKit 7 are automatically installed when you select the server component.
 - If you previously installed a server, ensure that you select the same directory when you install a language pack, license, or device driver. If you previously installed a storage agent, ensure that you select the same directory if you return to install a device driver.
 - A server and a storage agent cannot be installed on the same workstation.

Tip: During the upgrade from Tivoli Storage Manager Version 6.1 to Version 6.2, or if you uninstall any version of Tivoli Storage Manager 6.1 or later, including a fix pack, an instance file is created. The instance file is created to help reinstall Tivoli Storage Manager. If this file exists and you start an upgrade, the upgrade might fail because the server instance cannot be created when information is retrieved from the file. Consider removing or temporarily renaming the instance file if you have old information in it, or if you get an error message after adding your credentials to the **Instance user ID** panel of the installation wizard.

You can find the instance file in the following location:

Instance.dat in the Tivoli Storage Manager server installation directory

At the end of the upgrade, a message is displayed on the summary page that Tivoli Storage Manager successfully installed and a summary is provided. If there

were any errors during the upgrade, another summary page lists the errors and directs you to an error log file. Fix the errors before continuing. The installation log is stored in the following location:

The directory that was chosen for installation (look for the files `log.txt` and `logs.zip`).

Upgrading Tivoli Storage Manager in silent mode

Using silent mode is one method of upgrading Tivoli Storage Manager from Version 6.1.

See Chapter 6, “Upgrading from Tivoli Storage Manager Version 6.1,” on page 65 for an overview of the upgrade steps, before starting the upgrade.

Restriction: The following restrictions apply:

You must include the `LICENSE_ACCEPTED=true` and `INSTANCE_CRED` variables or the upgrade fails.

Changing the installation directory (the `USER_INSTALL_DIR` variable) is not supported.

To either create a new response file or use an existing one for the silent upgrade, select one of the following options.

Tip: After you start the silent upgrade, it immediately closes the foreground window and runs in the background. To receive a return code from the silent upgrade, run it using a batch script. See “Upgrading silently using a batch script” on page 70.

- To start the silent upgrade and include most Tivoli Storage Manager components, enter the following command on a single line:

```
install.exe -i silent -DLICENSE_ACCEPTED=true  
-DINSTALL_SERVER=1 -DINSTALL_SERVER_LANGUAGES=1  
-DINSTALL_LICENSE=1 -DINSTALL_DEVICES=1  
-DINSTANCE_CRED="instance1 userid1 password1,instance2 userid2 password2"
```

When you add the `INSTANCE_CRED` variable to the command, enter credentials for each of your server instances and use quotation marks around your credentials. To find the existing server instances, either issue the `db2ilist` command (from any path), or open Windows Services and go to **Start** → **Programs** → **Administrative Tools** → **Services**. Using Windows Services, you can find your server instances by looking for DB2-DB2TSM1 names, for example: DB2-DB2TSM1-SERVER1. The user ID is the name that is listed under **Log On As**.

A server and a storage agent cannot be installed on the same workstation. To upgrade the storage agent, use the `INSTALL_STAGENT` variable.

You can install the following server language-packs during the silent upgrade, using these variables:

- `INSTALL_GERMAN`
- `INSTALL_SPANISH`
- `INSTALL_FRENCH`
- `INSTALL_ITALIAN`
- `INSTALL_BRPORTUGUESE`
- `INSTALL_KOREAN`
- `INSTALL_JAPANESE`

- INSTALL_RUSSIAN
- INSTALL_SCHINESE
- INSTALL_TCHINESE

- To use an existing response file, enter the following command:

```
install.exe -i silent -DLICENSE_ACCEPTED=true -f response_file
```

where the *response_file* is the full directory path to a file that you previously created in the Tivoli Storage Manager upgrade process. The response file contains variables you selected in a prior upgrade, using the GUI or console wizard.

If you include LICENSE_ACCEPTED=true in the response file manually, then issue this command:

```
install.exe -i silent -f response_file
```

You might see a difference between response files, depending on which installation mode you used (GUI or console).

Fix any errors before continuing. See the following log for more information:

The upgrade directory (look for the file log.txt).

Upgrading silently using a batch script

To receive a return code from the silent upgrade, run it using a batch script.

To run the silent upgrade so that you can see the progress of the upgrade, create a batch script by completing the following steps:

1. Create a file and name it install.bat. The file name must end with .bat, not .bat.txt.
2. Choose an installation option (with or without a response file) and enter the command into the install.bat file. Save it. For example:
install.exe -i silent -DLICENSE_ACCEPTED=true -f *response_file*
3. Open a command prompt to run the batch file. Issue this command:
install.bat
4. After the upgrade is complete, issue the following command to retrieve the return code:
echo %ERRORLEVEL%

Fix any errors before continuing. See the log.txt in the *install_dir*.

Using Remote Execution Protocol on Windows Vista and Windows Server 2008

If you are using Remote Execution Protocol (REXEC) on Windows Vista or Windows Server 2008, use these procedures to configure your settings.

On a Windows Vista and Windows Server 2008 system, you must configure the User Account Control feature before running the wizard.

1. Enable Sharing for Guest or Everyone accounts.
2. Password-protected sharing must be disabled. To disable password-protected sharing, complete the following steps:
 - a. **Start** → **Settings** → **Control Panel** → **Networking and Internet** → **Sharing and Discovery**.

- b. Click the down arrow next to **password-protected sharing**.
 - c. Click **Turn off password protected sharing**.
 - d. Click **Apply** and exit the control panel.
3. Disable **User Account Control** if you are using a different Administrator user account to connect to a Windows Vista or Windows Server 2008 system. To disable User Account Control, complete the following steps:
- a. **Control Panel → Administrative Tools → Local Security Policy → Security Settings → Local Policies → Security Options**.
 - b. Double-click **User Account Control**.
 - c. Run all administrators in Administrator Approval Mode and select **Disable**.
 - d. Restart your system.

Chapter 7. Upgrading the reporting and monitoring feature to Version 6.2

You can upgrade to the reporting and monitoring feature, v6.2 from the reporting and monitoring feature, v6.1.

Upgrading the reporting and monitoring feature to version 6.2 using the installation wizard

You can upgrade the reporting and monitoring feature to version 6.2 using the reporting and monitoring installation wizard.

Confirm your system meets the system hardware and software and component requirements. See “System requirements for Tivoli Storage Manager reporting and monitoring” on page 38.

Confirm you have the required access privileges. See “Work sheet for installation information” on page 40.

To upgrade the Tivoli Storage Manager reporting and monitoring feature, complete the following steps:

1. Insert the Tivoli Storage Manager reporting and monitoring feature DVD. The Tivoli Storage Manager reporting and monitoring installation wizard starts.
If the installation wizard does not automatically start, click the **install.exe** file located in the directory where the Tivoli Storage Manager reporting and monitoring feature DVD is located. The default directory is *D://*.
2. Select the language for the wizard at the bottom of the page and click **OK**.
3. Accept the license agreement to proceed. Click **Next**.
4. On the **Component Selection** page, select the components that you want to install and click **Next**. To view the product in a language other than English, select the **Language package for feature** option and the **Language pack for agent only** option.

Attention: The installer checks the version level of any components you have previously installed. You can get the message: **No components to install** in the following scenarios:

- If you are installing the Reporting and monitoring feature, the feature language package, and the monitoring agent language package, and they are all at the same level or higher.
- If you are installing just the reporting and monitoring agent and the agent language package and they are all at the same level or higher.

If you get this message, select **Enter** to exit out of the installer.

5. If you selected the option to install the **Reporting and monitoring feature** component, accept the Tivoli Monitoring license agreement to proceed. Click **Next**.
6. Select the destination directory for this installation. If you are installing into an existing IBM Tivoli Monitoring environment, choose the exact directory where that code is installed.
7. The DB2 Enterprise Server Edition page is displayed. In the **DB2 password** field, enter the DB2 password that you used when installing the previous

version of the Tivoli Storage Manager reporting and monitoring feature. Leave all other selections with the default. Click **Next**.

Remember: After entering the DB2 password, if you get a Username/Password error, you did not enter the previously assigned DB2 password.

8. The Encryption page is displayed. Enter the encryption key and click **Next**. Make note of this key for later use.
9. The WebSphere Business Monitor Data Access Setup page is displayed. In the **Sysadmin ID password** field, enter the password twice. Click **Next**. This ID is the user ID and password for the Tivoli Enterprise Portal, where you can monitor real-time data.
10. The Database Access Setup page is displayed. In the **Database user ID password** field, enter the password twice and click **Next**. This ID is the user ID and password for the Tivoli Enterprise Portal Server database.
11. Accept the default installation location and click **Next**.
12. You are presented with the pre-installation summary of your configuration. Perform one of the following tasks:
 - To start the installation, click **Install**.
 - To make corrections or changes, click **Previous**.

At the end of the installation, the Installation Results page presents a message with the installation results. If there were any errors during the installation, the summary page lists the errors and directs you to an error log file.

To view historical reports, you must install the Administration Center. Chapter 5, "Installing and configuring the Administration Center," on page 55.

After installing the Administration Center, your previous reports and data source are overwritten. Reconfigure your data source. "Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal" on page 52.

If you did not perform the following configuration tasks when you previously installed the reporting and monitoring feature, complete these related tasks now.

Related tasks

"Configuring the Tivoli Enterprise Portal server" on page 44

"Configuring Tivoli Data Warehouse" on page 45

"Installing a reporting and monitoring agent" on page 48

"Configuring and activating the Warehouse Summarization and Pruning agent" on page 45

Chapter 8. Upgrading the Administration Center

To administer IBM Tivoli Storage Manager Version 6.2 and later servers, you must upgrade to the Administration Center Version 6.2.

The IBM Tivoli Integrated Portal is a graphical user interface (GUI) that you can install to work with the Tivoli Storage Manager Version 6.2 server. Tivoli Integrated Portal provides all the functions that were available in the Integrated Solutions Console. With Tivoli Storage Manager Version 6.2, the Administration Center is integrated as part of the Tivoli Integrated Portal instead of the Integrated Solutions Console.

See Chapter 5, “Installing and configuring the Administration Center,” on page 55 if you are installing the Administration Center for the first time.

The Administration Center provides wizards to help guide you through common configuration tasks. The Tivoli Integrated Portal lets you install components provided by multiple IBM applications, and access them from a single interface.

You must manually complete the upgrade from an earlier version of the Administration Center to Version 6.2. You must define your Tivoli Integrated Portal user IDs to the new Administration Center. In addition, you must provide credentials for each of the Tivoli Storage Manager servers.

Restriction: The Administration Center Version 6.2 is only compatible with the Tivoli Integrated Portal Version 1.1.1.2. If you have earlier versions of the Administration Center and Tivoli Integrated Portal installed, you must upgrade both.

The Administration Center can also be installed to a currently existing Tivoli Integrated Portal Version 1.1.1.2. In the panel where you select which directory to install into, there is an option to install to an existing Tivoli Integrated Portal. If you select that option, the panel is automatically filled in with information about any other Tivoli Integrated Portal Version 1.1.1.2 already installed on the system.

Overview of upgrade and coexistence

Upgrading involves collecting the configuration information from a previous version of the Administration Center and duplicating it in the new version. Coexistence involves running the Administration Center V6.2 on the same workstation at the same time as you run the previous version.

To support coexistence, provide non-conflicting port assignments. You can choose to have the same port definitions and run only one version or the other, or you can define separate ports and run two versions of the Administration Center concurrently.

If your disk space permits, having the two versions of the Administration Center coexist is the recommended upgrade strategy. It lets users have a functioning Administration Center during the time that it takes for the upgrade to complete. It also ensures that the configuration of the previous Administration Center is still accessible during the upgrade procedure.

Upgrade does not uninstall the previous version, which is still functional. After the upgrade completes successfully, you can uninstall the previous Administration Center using its documented process.

The Administration Center Version 6.2 is not compatible with the Integrated Solutions Console. The Integrated Solutions Console was part of the Administration Center for Tivoli Storage Manager Version 6.1.0. You must install the Version 6.2 Administration Center with Tivoli Integrated Portal.

Upgrading procedure for the Administration Center

Use the upgrade procedure to upgrade from a previous version of the IBM Tivoli Storage Manager Administration Center to the Administration Center Version 6.2.

The 6.1 Administration Center is built on the Integrated Solutions Console and the 6.2 Administration Center is built on the Tivoli Integrated Portal. You can either have both versions (6.1 and 6.2) on your workstation at the same time, or uninstall Version 6.1 and then install the Version 6.2 Administration Center.

There are two scenarios for upgrading to the Version 6.2 Administration Center, depending upon which Administration Center version you are using.

- If you are upgrading from a Tivoli Storage Manager Version 5.5 Administration Center, you can locate and save the database file, `tsmservers.xml`, for the Tivoli Storage Manager server.
- If you are upgrading from a Tivoli Storage Manager Version 6.1 Administration Center, you can use the Manage Servers section to download a file containing information about the defined Tivoli Storage Manager servers.

To start the upgrade procedure, complete the following steps:

1. Obtain information about the Tivoli Storage Manager servers defined to the previous Administration Center:
 - If the Administration Center is earlier than Version 6.1, save the `tsmservers.xml` file that is located in the installation directory of the earlier Administration Center.
 - If you have a Version 6.1 Administration Center, you can download the server definitions to a file. Click **Manage Servers** → **Download Connection File**. For more details on the contents of the file and how to use it, refer to the Manage Servers help section in the Administration Center.
2. Prepare for the installation by collecting your user IDs and server credentials from the earlier Administration Center.
3. Install Administration Center Version 6.2. Note the following restrictions:
 - Integrated Solutions Console user IDs are not recreated in the new Administration Center.
 - Tivoli Storage Manager server credentials are not recreated in the new Administration Center.
 - If you have the reporting and monitoring feature installed, the Administration Center upgrade overwrites your existing reports and data source connections. After upgrading the Administration Center, you have to reconfigure the data source in order to view your reports. For steps on configuring your data source, see “Configuring a data source for the reporting and monitoring feature using the Tivoli Integrated Portal” on page 52.

4. Manually duplicate the user configuration of your earlier Administration Center. Build up a new environment for Version 6.2:
 - a. Obtain the information about user IDs and server credentials from the earlier Administration Center. You must have the valid Administration Center user ID and password to upgrade the Administration Center.
 - b. Define each Integrated Solutions Console user previously defined to the earlier Administration Center.
 - c. Define to each Tivoli Integrated Portal user ID its set of Tivoli Storage Manager server connections.
 - The Tivoli Storage Manager server database file (tsmservers.xml) from the Version 5.5 Administration Center can be uploaded.
 - The server definitions file previously downloaded from Version 6.1 can be uploaded. Save the file, then load the server definitions into the Version 6.2 Administration Center by clicking **Action** → **Upload Connection File**.
5. Optional: Uninstall the earlier Administration Center.

Obtaining information about Tivoli Integrated Portal or Integrated Solutions Console users

You can find information about users through the Users and Groups menu item.

Complete the following steps to obtain information about the defined user IDs:

1. Expand the **Console Settings** item in the navigation tree.
2. Click **User and Group Management**.
3. In the Search drop-down list, click **Users**.
4. In the Search by drop-down list table, click uid.
5. In the Search entry field, enter *.
6. Click **Search**. The table is filled with all known user IDs. Capture this information for later use.
7. Determine the password for each of these IDs.

Defining Integrated Solutions Console users to the Version 6.2 Administration Center

When you upgrade to the Version 6.2 Administration Center, you must define the user IDs to the IBM Tivoli Integrated Portal.

You can create a separate Tivoli Integrated Portal user ID for each Tivoli Storage Manager administrator, or for a group of administrators. As a best practice, give each Tivoli Storage Manager administrator their own Tivoli Integrated Portal administrator ID. Creating separate Tivoli Integrated Portal administrator IDs can help you control access for administrators who manage different servers, or have different privilege classes. After logging on using this ID, they can use their Tivoli Storage Manager administrator name and password to manage connections for the servers they manage.

Complete the following steps to define the Integrated Solutions Console user IDs to Tivoli Integrated Portal:

1. In the navigation tree, expand **Users and Groups**.
2. Click **Manage Users**.
3. Click **Create**.

4. Click **Group Membership**.
5. Select **Group name**, then click **Search**.
6. Add TSM_AdminCenter to the Current groups list.
7. Click **Close**. The TSM_AdminCenter group is a shell for you to populate with users. You must manually enter the user credentials.
8. Complete the form and click **Create**.

Server connections to the Administration Center

A Manage Servers section is in the Tivoli Integrated Portal navigation tree of the Version 6.2 Administration Center. When you open this section, you are presented with a table of servers defined to the Administration Center for your Integrated Solutions Console or Tivoli Integrated Portal user ID.

From the Manage Servers section, you can quickly provide server connection information to the Administration Center. To facilitate this configuration step, the table of servers contains an action that lets you upload to the Administration Center an XML file that contains connection information and, optionally, a set of credentials for each Tivoli Storage Manager server.

This action can be used as an alternative method for defining the Tivoli Storage Manager servers of the earlier Administration Center to the Version 6.2 Administration Center. If you chose not to have the two versions of the Administration Center coexist, you can upload the `tsmservers.xml` file saved from the previous Administration Center. This operation makes the servers known to the Version 6.2 Administration Center, but the server credentials must be provided for each server. Optionally, you can choose to edit the `tsmservers.xml` file and add Tivoli Storage Manager server credentials to the connections of the user that is performing the file upload operation. Refer to the Administration Center help for more information about uploading a connections file.

If you choose to have the two versions of the Administration Center coexist, the installation of the Version 6.2 Administration Center copies the `tsmservers.xml` file from the earlier Administration Center. You do not need to use the upload action in this case. The Tivoli Storage Manager servers are known to the Version 6.2 Administration Center, but the server credentials must be provided for each server.

For both scenarios, the server connections for each Integrated Solutions Console or Tivoli Integrated Portal user ID do not include Tivoli Storage Manager server credentials. Such a connection is considered to be an incomplete or partial server connection by the Version 6.2 Administration Center. In the Manage Servers section, the table of servers defined to the Administration Center contains a column that indicates if a server connection contains Tivoli Storage Manager server credentials.

You can handle the partial server connections in two ways. You can either leave the connections in the partial state. When the Tivoli Integrated Portal user later attempts to use a partial server connection, the user is prompted to complete the server connection information. Or, you can use the Change Password action of the Manage Servers table to display a form that lets you quickly define Tivoli Storage Manager server credentials for one or more server connections.

In general, partial server connections result in the display of the Incomplete Server Connection form. However, there are cases when the form cannot be displayed. In these cases, an error message is displayed indicating that the user should complete

the server connection by performing a detailed action. For example, the table of libraries attempts to obtain information about all the libraries across a set of servers. The user cannot be presented with the form for each server that has the issue.

ANRW0017E The server connection currently does not include the credentials required to access the server.

Explanation

An administrative session could not be started with the server because the server connection does not contain an administrator ID and password. The Administration Center will continue to deny access attempts to the server until a valid administrator ID and password are provided.

Administrator response

To complete the server connection information for this server: In the navigation tree, click Manage Servers. Select the server from the list of servers. Click Select Action > Modify Server Connection.

Chapter 9. Installing a Tivoli Storage Manager server fix pack

Tivoli Storage Manager maintenance updates, also referred to as fix packs, bring your server up to the current maintenance level. The Tivoli Storage Manager server must not be running during maintenance updates.

To install a fix pack or interim fix to the server, you must have the Tivoli Storage Manager license package installed. The license package is provided with the purchase of a base release.

To see a list of the latest maintenance and download fixes, visit this Web site: http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager. Click **Support and downloads** and apply any applicable fixes. For information about obtaining a base license package, click **Warranties and licenses**.

For information about supported platforms and system requirements, go to the same Web site (http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager) and click **Server requirements**.

To install a fix pack or interim fix, complete the following steps.

Attention: To preserve your server instances and database, do not uninstall your previous version of Tivoli Storage Manager.

1. Obtain the package file for the fix pack or interim fix you want to install from the Tivoli Storage Manager FTP downloads site: <ftp://ftp.software.ibm.com/storage/tivoli-storage-management/maintenance/server>.
2. Change to the directory where you placed the executable file. Then, either double-click the following executable file or enter the following command on the command line to extract the installation files.

Tip: The files are extracted to the current directory. Ensure that the executable file is in the directory where you want the extracted files to be located.

`6.x.x.x-TIV-TSMALL-platform.exe`

where *platform* denotes the operating system that Tivoli Storage Manager is to be installed on.

3. Ensure that you have backed up your Tivoli Storage Manager database. See the *Administrator's Guide* for more details.
4. Halt the server before installing a fix pack or interim fix.
5. Select one of the following ways of installing Tivoli Storage Manager.

Important: After a fix pack is installed, it is not necessary to go through the configuration again. You can stop after completing the installation itself, fix any errors, then restart your servers.

Installation wizard

"Installing Tivoli Storage Manager using the installation wizard" on page 12

Command-line console wizard

"Installing Tivoli Storage Manager using the console installation wizard" on page 13

Silent mode

“Installing Tivoli Storage Manager in silent mode” on page 13

Fix any errors before continuing. The installation log, `installFixPack.log`, is stored in the following location:

`coi\plan\tmp`

Chapter 10. Uninstalling Tivoli Storage Manager

You can use the following procedures to uninstall Tivoli Storage Manager. Before you remove Tivoli Storage Manager, there are several steps to complete to ensure that you do not lose your backup and archive data.

If you are running on 64-bit Windows Server 2008, ensure that you have created at least one Tivoli Storage Manager server instance before uninstalling Tivoli Storage Manager, or the uninstallation of DB2 might fail. See Chapter 3, "Taking the first steps after you install Tivoli Storage Manager," on page 17 for details about creating a server instance.

CAUTION:

Do not use the Add/Remove Programs tool in the Windows Control Panel to uninstall Tivoli Storage Manager. Use only the uninstallation procedure described in this section.

Complete the following steps before you uninstall Tivoli Storage Manager:

- Complete a full database backup.
- Save a copy of the volume history and device configuration files.
- Store the output volumes in a safe location.

Important: Uninstalling Tivoli Storage Manager removes all components of the Tivoli Storage Manager server Version 6.2. It is not possible to uninstall a single component of the product by itself. For example, you cannot uninstall only the Tivoli Storage Manager device driver and leave the Tivoli Storage Manager server.

- To uninstall Tivoli Storage Manager using the standard method, complete the following steps:
 1. Change to this directory: C:\Program Files\Tivoli\TSM_uninst
 2. Use one of the following methods to uninstall Tivoli Storage Manager:
 - To use the installation wizard (GUI) to uninstall Tivoli Storage Manager, double-click the .exe file or enter the following command:
"Uninstall Tivoli Storage Manager.exe"
 - To use the console to uninstall Tivoli Storage Manager, enter this command:
"Uninstall Tivoli Storage Manager.exe" -i console
 - To silently uninstall Tivoli Storage Manager, enter this command:
"Uninstall Tivoli Storage Manager.exe" -i silent
 3. Follow the prompts to uninstall Tivoli Storage Manager.
- To uninstall Tivoli Storage Manager using silent mode with a batch script, complete the following steps:

Tip: If you do not use a batch script, this uninstallation method immediately closes the foreground window and runs in the background. You will not receive a return code.

1. Create a file and name it uninstall.bat. The file name must end with .bat, not .bat.txt.
2. Type this command into the uninstall.bat file and save it:
"Uninstall Tivoli Storage Manager.exe" -i silent

3. Double-click the `uninstall.bat` file or start it using a command prompt.
4. If you are using a command prompt, after the uninstallation is complete, issue the following command to retrieve the return code:
`echo %ERRORLEVEL%`

See Chapter 2, “Installing Tivoli Storage Manager,” on page 11 for Tivoli Storage Manager Version 6.2 installation steps to reinstall the components.

Uninstalling and reinstalling Tivoli Storage Manager

If you plan to manually reinstall Tivoli Storage Manager instead of using the wizard, there are a number of steps to take to preserve your server instance names and database directories. During an uninstallation, any server instances you had set up are removed, but the database catalogs for those instances still exist.

If you are using the wizard to upgrade from Tivoli Storage Manager Version 6.1, it is not necessary to complete these steps, the wizard completes them automatically. To manually uninstall and reinstall Tivoli Storage Manager complete the following steps:

1. Make a list of your current server instances before proceeding to the uninstallation.
 - a. Open Windows Services. Go to **Start → Programs → Administrative Tools → Services**
 - b. Find your existing server instances by looking for DB2-DB2TSM1 names, for example: DB2-DB2TSM1-SERVER1. Keep a record of each server name and each user ID associated with that server instance. The user ID is the name that is listed under **Log On As**.
2. Run the following commands for every server instance:


```
db2 attach to server1
db2 get dbm cfg show detail
db2 detach
```

Keep a record of the database path for each instance.

3. Uninstall Tivoli Storage Manager. See Chapter 10, “Uninstalling Tivoli Storage Manager,” on page 83.

After uninstalling Tivoli Storage Manager, check the **Control Panel → Add or Remove Programs** to verify that Tivoli Storage Manager DB2 is uninstalled.

4. When you uninstall any version of Tivoli Storage Manager 6.1 or later, including a fix pack, an instance file is created. The instance file is created to help reinstall Tivoli Storage Manager. Check this file and use the information when you are prompted for the instance credentials when reinstalling. In silent installation mode, you provide these credentials using the `INSTANCE_CRED` variable.

You can find the instance file in the following location:

Instance.dat in the Tivoli Storage Manager server installation directory

5. Reinstall Tivoli Storage Manager. See Chapter 2, “Installing Tivoli Storage Manager,” on page 11.
6. Recreate your server instances. See “Creating the server instance” on page 23.

Tip: The installation wizard configures the server instances but you must verify that they exist. If they do not exist, you must manually configure them.

7. Catalog the database. Log in to each server instance as the instance user, one at a time, and issue the following commands:

```
set db2instance=server1
db2 catalog database tsmdb1
db2 attach to server1
db2 update dbm cfg using dftdbpath instance_drive
db2 detach
```

8. Verify that Tivoli Storage Manager recognizes the server instance by listing your directories. Your home directory appears if you did not change it. Your instance directory does appear if you used the configuration wizard. Issue this command:

```
db2 list database directory
```

If you see TSMDB1 listed, you can start the server.

Appendix A. Installation log files

If you experience errors during installation, these errors are recorded in several log files that are distributed in various locations.

The following table describes the files that are created when you install or uninstall Tivoli Storage Manager and recommends which files to check when looking for information that might help you troubleshoot problems:

Table 14. Contents of the log.zip file

File Name	Description	Location
The log.txt file contains information about the following Environment Checks: <ul style="list-style-type: none">• Platform• Version• Architecture• Prerequisites	Contains installation log files. Review this log file when any installation failures occur.	This file is located in: the InstallAnywhere location that you specified. The InstallAnywhere exit codes are in the log.txt file and can also be summoned by command. You can only retrieve the exit codes after the installation wizard is finished installing. The exit codes are for the Tivoli Storage Manager installation and upgrade from Tivoli Storage Manager Version 6.2 installation wizards as well as the Tivoli Storage Manager reporting and monitoring installation wizard. To use the command line, issue the following command: echo %ERRORLEVEL% See Table 15 on page 88 for all the InstallAnywhere exit codes.
DE_Install.log	Contains information about the Deployment Engine (DE) installation. Review this log file if the DE installation fails.	de\root
db2setup.log	Contains information about the DB2 installation	coi\plan\logs
db2_uninst.log	Contains information about the DB2 uninstallation	coi\plan\logs

Table 14. Contents of the log.zip file (continued)

File Name	Description	Location
DB2.log	Contains information about the installation and uninstallation commands. Return codes can be retrieved from this log file, but not for DB2. If installation or uninstallation completed, the executePackage or remove-package scripts for a component are available.	coi\plan\install or coi\plan\uninstall
Administration Center installation log files	<p>Installation log files.</p> <p>Review these log files if the Administration Center installation or uninstallation fails. For log information about additional Administration Center components, see the <i>Problem Determination Guide</i>.</p>	<ul style="list-style-type: none"> coi\plan\install\logs coi\plan\install\MachinePlan_<host_name>\00001_eWAS coi\plan\install\MachinePlan_<host_name>\00002_TIP coi\plan\install\MachinePlan_<host_name>\00003_TSM_AdminCenter <p>or</p> <ul style="list-style-type: none"> <install_root>_uninst\plan\install\MachinePlan_<host_name>\00001_eWAS <install_root>_uninst\plan\install\MachinePlan_<host_name>\00002_TIP <install_root>_uninst\plan\install\MachinePlan_<host_name>\00003_TSM_AdminCenter

Table 15. InstallAnywhere exit codes

Code	Description
0	Success: The installation completed successfully without any warnings or errors.
1	The installation completed successfully, but one or more of the actions from the installation sequence caused a warning or a non-fatal error.
-1	One or more of the actions from the installation sequence caused an unrecoverable error.
1000	The installation was canceled by the user.
1001	The installation includes an invalid command-line option.
2000	Unhandled error.
2001	The installation failed the authorization check, might indicate an expired version.
2002	The installation failed a rules check. A rule placed on the installer itself failed.

Table 15. InstallAnywhere exit codes (continued)

Code	Description
2003	An unresolved dependency in silent mode caused the installer to exit.
2004	The installation failed because not enough disk space was detected during the execution of the Install action.
2005	The installation failed while trying to install on a Windows 64-bit system, but installation did not include support for Windows 64-bit systems.
2006	The installation failed because it was launched in a UI mode that is not supported by this installer.
3000	Unhandled error specific to a launcher.
3001	The installation failed due to an error specific to the lax.main.class property.
3002	The installation failed due to an error specific to the lax.main.method property.
3003	The installation was unable to access the method specified in the lax.main.method property.
3004	The installation failed due to an exception error caused by the lax.main.method property.
3005	The installation failed because no value was assigned to the lax.application.name property.
3006	The installation was unable to access the value assigned to the lax.nl.java.launcher.main.class property.
3007	The installation failed due to an error specific to the lax.nl.java.launcher.main.class property.
3008	The installation failed due to an error specific to the lax.nl.java.launcher.main.method property.
3009	The installation was unable to access the method specified in the lax.nl.launcher.java.main.method property.
4000	A component to start Java™ could not be found at the directory specified by the java.home system property.
4001	An incorrect path to the installer jar caused the relaucher to launch incorrectly.

Appendix B. Services associated with the Tivoli Storage Manager server

When you start the Tivoli Storage Manager server as a service, other services automatically start. These services are associated with the database manager, DB2.

The following services are associated with the Tivoli Storage Manager server.

Service name	Purpose	Comments
TSM <i>Server_instance</i>	The service for the Tivoli Storage Manager server instance that is named <i>Server_instance</i> . For example: TSM Server1	Set the start and stop options for this service to start and stop the server instance automatically. Each server instance runs as a separate service.
DB2 - DB2TSM1 - <i>SERVER_INSTANCE</i>	The DB2 service for the server instance that is named <i>Server_instance</i> . For example: DB2 - DB2TSM1 - SERVER1	This service is automatically started when the service for the Tivoli Storage Manager server instance is started. The DB2 service is not stopped automatically when you stop the service for the server. The system has one of these services for each server-instance service that is started on the system.
DB2 Governor (DB2TSM1)	A DB2 service that is created at installation time, and is required for all server instances.	Do not change the options for this service.
DB2 License Server (DB2TSM1)	A DB2 service that is created at installation time, and is required for all server instances.	Do not change the options for this service.
DB2 Management Server (DB2TSM1)	A DB2 service that is created at installation time, and is required for all server instances.	Do not change the options for this service.
DB2 Remote Command Server (DB2TSM1)	A DB2 service that is created at installation time, and is required for all server instances.	Do not change the options for this service.

Appendix C. Accessibility features for Tivoli Storage Manager

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

Accessibility features

The following list includes the major accessibility features in Tivoli Storage Manager:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are discernible by touch but do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices
- User documentation provided in HTML and PDF format. Descriptive text is provided for all documentation images.

The Tivoli Storage Manager Information Center, and its related publications, are accessibility-enabled.

Keyboard navigation

The Tivoli Storage Manager for Windows Console follows Microsoft conventions for all keyboard navigation and access. Drag and Drop support is managed using the Microsoft Windows Accessibility option known as MouseKeys. For more information about MouseKeys and other Windows accessibility options, please refer to the Windows Online Help (keyword: MouseKeys).

Vendor software

Tivoli Storage Manager includes certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for the accessibility information about its products.

Related accessibility information

You can view the publications for Tivoli Storage Manager in Adobe® Portable Document Format (PDF) using the Adobe Acrobat Reader. You can access these or any of the other documentation PDFs at the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

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Glossary

A glossary is available with terms and definitions for the IBM Tivoli Storage Manager server and related products.

The glossary is located in the Tivoli Storage Manager information center: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6r2>

Index

A

- accessibility features 93
- activating
 - server 29
- activating server options 24
- active log mirror
 - description 8
- active log space 8
- Administration Center
 - backward compatibility 75
 - configuring server 17, 19
 - console installation wizard 57
 - default port 56, 57
 - DISPLAY 56, 57
 - installation 56, 57
 - installation log 56, 57
 - installation wizard 56
 - installing 56, 57
 - LD_LIBRARY_PATH_64 56, 57
 - overview 55
 - port 56, 57
 - secure port 56, 57
 - SELINUX 56, 57
 - server connection to 78
 - system requirements 55
 - Tivoli Storage Manager installation 60
 - uninstalling 60, 62
 - upgrading 75, 76
 - verifying 60
 - Version 6.2 xiii
- Administration Center reporting 52
- administrative commands
 - HALT 31
 - REGISTER LICENSE 31
- ADSMSCSI 2
- agent
 - reporting and monitoring , installing on existing server 49
 - reporting and monitoring, installing 48, 49
- API 22, 28
- API configuration 22, 28
- archive failover log space
 - description 9
- archive log directory 18
- archive log space
 - description 8

B

- BACKUP DB command 22, 28
- backup-archive client
 - installable package 2
- backups
 - database 31
- batch script 15, 70

C

- capacity planning 6
- client options
 - for shared memory communications 26

- coexistence
 - Administration Center 75
- commands
 - administrative, SET DBRECOVERY 31
 - DSMSERV FORMAT 27
- commands, administrative
 - HALT 31
 - REGISTER LICENSE 31
- Common reporting tool 35
- communication methods
 - Named Pipes 25
 - setting 24
 - Shared Memory 26
 - SNMP 26
 - TCP/IP 25
- components
 - installable 2
- configuration wizard 20
- configuring 17, 19, 23
 - communication protocols 24
 - data source 52
 - data source after upgrade 76
 - historical data collection 47
 - historical reporting 45
 - reporting and monitoring agent instance 51
 - summarization and pruning agent 45
 - Tivoli Data Warehouse 45
 - Tivoli Enterprise Portal server on Windows 44
- configuring Tivoli Storage Manager server
 - minimal 21
- configuring, manually 17, 19, 23
- configuring, server instance 19
- configuring, wizard 17, 19, 20
- console installation wizard 13, 68
- Console language support 15
- create server instance 17, 19
- Credential Vault 75
- custom reporting 35, 53
- customer support
 - contact ix

D

- data source 52
- database
 - backups 31
 - error logs 87
 - estimating the space needed 6
 - installing 27
 - name 9
- database directories 18
- database manager 22, 28
- database manager (DB2TSM1) 91
- DB2
 - installation logs 87
- db2icrt command 23
- device driver, Tivoli Storage Manager 2
- directories
 - naming for server 9
- directories, instance 18
- DISPLAY variable 13, 67, 68

DSMSERV FORMAT command 27

E

education
 see Tivoli technical training vii
enabling client/server communications 24
error logs
 DB2 87
 installation 87
expiration
 server option 29

F

first steps 17
fix packs 81
fixes 11, 56
fixes, obtaining ix
FORMAT, DSMSERV 27

G

group 18

H

HALT command 31
halting the server 31
hardware requirements
 reporting and monitoring feature 38
historical data collection
 configuring 47
home directory 23

I

IBM Software Support
 submitting a problem xi
IBM Support Assistant viii
IBM Tivoli Monitoring
 installing a reporting and monitoring agent on an existing
 server 49
installable components 2
InstallAnywhere
 exit codes 87
installation log 12, 13, 67, 68
installation wizard 12, 67
installing 12, 67
 Administration Center 56
 BIRT 53
 database 27
 device support 11
 fix packs 81
 minimum requirements for 4
 recovery log 27
 reporting and monitoring agent 48, 49
 reporting and monitoring feature 41
 server 1, 11
 Tivoli Storage Manager reporting and monitoring 35
 Tivoli Storage Manager server 13
 what to know before 1
 work sheet for reporting and monitoring feature 40
installing the Administration Center
 silently 58

installing the Tivoli Storage Manager Administration
 Center 58
installing the Tivoli Storage Manager server 13
 silently 13
instance directories 18
instance user ID 9
Integrated Solutions Console
 users 77
interim fix 81
Internet, searching for problem resolution viii, ix

K

KILL command 31
knowledge bases, searching vii

L

LANGUAGE option 15, 16
language support 16
languages, set 16
LD_LIBRARY_PATH_64 variable 13, 67, 68
license, Tivoli Storage Manager 31
licenses
 installable package 2
Linux installation
 SELinux AVC denial 87
log files
 installation 87

M

maintenance updates 81
memory requirements
 reporting and monitoring feature 38
Microsoft Management Console
 starting server 29
monitoring
 logs 32
multiple servers
 upgrading
 multiple servers 32

N

Named Pipes 25
names, best practices
 database name 9
 directories for server 9
 instance user ID 9
 server instance 9
 server name 9

O

operational reporting 2
options
 communications 24
 starting the server 29
options, client
 SSLTCPADMINPORT 25
 SSLTCPPOINT 25
 TCPADMINPORT 25
 TCPPOINT 25
 TCPWINDOWSIZE 25

P

- Passport Advantage 11
- planning
 - installing Tivoli Storage Manager reporting and monitoring 35
- problem determination
 - describing problem for IBM Software Support x
 - determining business impact for IBM Software Support x
 - submitting a problem to IBM Software xi
- publications
 - download v
 - order v
 - search v
 - Tivoli Storage Manager vi

Q

- quick configuration 21

R

- recovery log
 - active log mirror 8
 - active log space 8
 - archive failover log space 9
 - archive log space 8
 - installing 27
 - log mirror 8
 - space requirements 8
- REGISTER LICENSE command 31
- Remote Execution Protocol 21, 70
- removing the Tivoli Storage Manager server 83
- reporting and monitoring agent, installing 48, 49
- reporting and monitoring agent, installing on an existing server 49
- reporting and monitoring feature
 - changes xiii
 - configuring historical data collection 47
 - configuring summarization and pruning agent 45
 - configuring Tivoli Data Warehouse 45
 - configuring Tivoli Enterprise Portal server on Windows 44
 - configuring Windows reporting and monitoring agent instance 51
 - Version 6.2 xiii
 - what to configure after installing 43
 - work sheet 40
- reports
 - installing overview 35
 - installing reporting and monitoring agent 48, 49
 - installing reporting and monitoring feature 41
 - reporting and monitoring agent on an existing server 49
 - uninstalling reporting and monitoring feature 53
 - upgrading 73
 - upgrading reporting and monitoring feature 73
- requirements for installation 4
- responses
 - saving 12, 13, 67, 68
- REXEC 21, 70

S

- SELINUX 12, 13, 67, 68
- server
 - naming best practices 9

- server (*continued*)
 - starting
 - using Windows services 29
 - stopping 31
- server instance 19, 23
- server instance, creating 23
- server instances
 - naming 9
 - naming best practices 9
- server license 31
- server, Tivoli Storage Manager
 - activating 29
 - halting 31
 - options 24, 25
 - setting up 29
 - starting 29
- services on Windows systems
 - database manager (DB2TSM1) 91
 - DB2 91
 - server 91
- SET DBRECOVERY 31
- setting server options 24
- shared memory client options 26
- shared memory communications method 26
- silent installation
 - Administration Center 58
 - batch file 15, 70
 - Tivoli Storage Manager 13
- silent upgrade
 - Tivoli Storage Manager 69
- SNMP communication method 26
- software requirements
 - reporting and monitoring feature 38
- Software Support
 - contact ix
 - describing problem for IBM Software Support x
 - determining business impact for IBM Software Support x
- special system configurations 1
- SSLTCPADMINPORT option 25
- SSLTCPPOINT option 25
- starting
 - server 29
- stopping
 - server 31
- summary of amendments
 - Version 6.2 xiii
- support information vii

T

- TCP/IP
 - setting options 25
 - Version 4 25
 - Version 6 25
- TCPNODELAY option 25
- TCPPOINT option 25
- TCPWINDOWSIZE option 25
- technical changes xiii
- Tivoli Data Warehouse
 - configuring 45
- Tivoli Enterprise Portal server
 - configuring on Windows 44
- Tivoli Integrated Portal 52, 60
 - backward compatibility 75
- console help server
 - start 61
 - stop 61

- Tivoli Integrated Portal *(continued)*
 - console server
 - start 61
 - stop 61
 - overview 55
 - users 62, 77
- Tivoli Storage Manager
 - installation 12
 - server changes xiii
 - upgrade 68
 - upgrading 67
 - Version 6.2 xiii
- Tivoli Storage Manager device driver, installable package 2
- Tivoli Storage Manager fix packs 81
- Tivoli Storage Manager support site 11
- Tivoli Storage Manager, setting up 29
- Tivoli technical training vii
- training, Tivoli technical vii
- translation features 15
- translations 15

U

- U.S. English 16
- uninstalling 83, 84
 - Administration Center 62
 - reporting and monitoring feature 53
 - reporting and monitoring feature on Windows 53
 - Tivoli Storage Manager 83
- uninstalling and reinstalling 84
- upgrading 68
 - reporting and monitoring feature 73
- upgrading the Tivoli Storage Manager server 69
 - silently 69
- upgrading, from 6.1 65
- upgrading, to Version 6.2 65
- User Account Control 21, 70
- user ID 18

W

- Windows
 - configuring the reporting and monitoring agent for
 - historical reporting 51
 - uninstalling reporting and monitoring feature 53
- Windows Server 2008 21, 70
- Windows service 18
 - creating 27
- Windows services
 - Tivoli Storage Manager server 91
- Windows Services Control Manager
 - starting server 29
- Windows Vista 21, 70
- work sheet
 - installing reporting and monitoring feature 40
 - server space planning 9



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