

IBM Tivoli Storage Manager
for Windows
Version 6.3.4

Installation Guide



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Note:

Before using this information and the product it supports, read the information in "Notices" on page 219.

This edition applies to Version 6.3.4 of IBM Tivoli Storage Manager (product number 5608-E01, 5608-E02, 5608-E03) and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. This edition replaces GC23-9785-04.

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Preface

This publication contains installation and configuration instructions for the IBM® 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 IBM Tivoli Storage Manager Operations Center, the Tivoli Integrated Portal and Administration Center, and Tivoli Monitoring for Tivoli Storage Manager are also included in this publication.

Who should read this guide

This publication is intended for a system administrator installing and configuring a Version 6.3 or later Tivoli Storage Manager server, the Operations Center, the Administration Center, or Tivoli Monitoring for Tivoli Storage Manager, or upgrading from Tivoli Storage Manager Version 6.1 or 6.2.

If you are upgrading an existing 5.5.x Tivoli Storage Manager server to Tivoli Storage Manager Version 6.3 or later, see the *Upgrade and Migration Guide for V5 Servers*.

If you are upgrading a Tivoli Storage Manager Version 6.1 or Version 6.2 server to a newer version, see Chapter 5, “Upgrading to Tivoli Storage Manager Version 6.3 or later,” on page 65.

If you are upgrading an existing Tivoli Storage Manager Version 6.3 server to a later level of Version 6.3, see Chapter 4, “Installing a Tivoli Storage Manager server fix pack,” on page 59.

If you are installing Tivoli Monitoring for Tivoli Storage Manager, see Chapter 9, “Installing Tivoli Monitoring for Tivoli Storage Manager,” on page 107.

If you are upgrading Tivoli Monitoring for Tivoli Storage Manager, see Chapter 10, “Upgrading Tivoli Monitoring for Tivoli Storage Manager to Version 6.3, or later,” on page 143.

If you are installing the Operations Center, see Part 3, “Installing the Operations Center,” on page 151.

If you are installing the Administration Center, see Chapter 19, “Installing and configuring the Administration Center,” on page 179.

If you are upgrading the Administration Center, see Chapter 21, “Upgrading the Administration Center to Version 6.3 or later,” on page 203.

Installable components

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

You can install the following components for Tivoli Storage Manager V6.3.4 or later.

- 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 Operations Center
- Tivoli Storage Manager Administration Center
- Tivoli Monitoring for Tivoli Storage Manager

Tivoli Monitoring for Tivoli Storage Manager must not be installed on any system that contains a Tivoli Storage Manager server instance.

Table 1 describes all the installable components. These components are in several different installation packages.

Table 1. Tivoli Storage Manager installable components

Tivoli Storage Manager component:	Description:	Additional information:
Server (required)	Includes the database, client API, GSKit, and tools to help you configure and manage Tivoli Storage Manager.	See the Tivoli Storage Manager server overview in the <i>Administrator's Guide</i> .
Language package (optional)	Each language package (one for each language) contains language-specific information for the server.	See "Installing server language packages" on page 34.
Licenses (required)	Includes support for all Tivoli Storage Manager licensed features. After you install this package, you must configure the licenses you purchased.	See the chapter on managing server operations in the <i>Administrator's Guide</i> .

Table 1. 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>See 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 website, 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).</p> <p>Remember: The IBM Tivoli Storage Manager for Storage Area Networks is a separately licensed product.</p>	See the <i>Storage Agent User's Guide</i> .
Operations Center (optional)	<p>Installs the Installation Manager and Operations Center that automatically help you configure and manage Tivoli Storage Manager. Optional components such as Tivoli Common Reporting are also available.</p> <p>Remember: The Operations Center is on a separate DVD.</p>	See Part 3, "Installing the Operations Center," on page 151.

Table 1. Tivoli Storage Manager installable components (continued)

Tivoli Storage Manager component:	Description:	Additional information:
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 Storage Manager client performance monitor <p>Optional components such as Tivoli Common Reporting are also available.</p> <p>Tip: The Administration Center is on a separate DVD.</p>	See "System requirements" on page 180.
Tivoli Monitoring for Tivoli Storage Manager (optional)	<p>Provides reports and real time monitoring information about Tivoli Storage Manager servers and client activity.</p> <p>Tip: Tivoli Monitoring for Tivoli Storage Manager is on a separate DVD.</p>	See Chapter 9, "Installing Tivoli Monitoring for Tivoli Storage Manager," on page 107.

Publications

Publications for the IBM Tivoli Storage Manager family of products are available online. The Tivoli Storage Manager product family includes IBM Tivoli Storage FlashCopy® Manager, IBM Tivoli Storage Manager for Space Management, IBM Tivoli Storage Manager for Databases, and several other storage management products from IBM Tivoli.

To search all publications, search across the appropriate Tivoli Storage Manager information center:

- Version 6.3 information center: <http://pic.dhe.ibm.com/infocenter/tsminfo/v6r3>
- Version 6.4 information center: <http://pic.dhe.ibm.com/infocenter/tsminfo/v6r4>

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 the Tivoli Storage Manager product family. You can find Tivoli Documentation Central at <http://www.ibm.com/tivoli/documentation>.

You can also order some related publications from the IBM Publications Center website at <http://www.ibm.com/shop/publications/order/>. The website 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

The following tables list the publications that make up the Tivoli Storage Manager library.

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 Oracle Solaris Installation Guide</i>	GC23-9784
<i>IBM Tivoli Storage Manager for Oracle Solaris Administrator's Guide</i>	SC23-9772
<i>IBM Tivoli Storage Manager for Oracle 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 for z/OS Media Installation and User's Guide</i>	SC27-4018
<i>IBM Tivoli Storage Manager Upgrade and Migration Guide for V5 Servers</i>	GC27-4017
<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 Oracle 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
<i>IBM Tivoli Storage Manager for UNIX and Linux: Backup-Archive Clients Installation and User's Guide</i>	SC23-9791
<i>IBM Tivoli Storage Manager for Windows: Backup-Archive Clients Installation and User's Guide</i>	SC23-9792
<i>IBM Tivoli Storage Manager Using the Application Programming Interface</i>	SC23-9793
<i>IBM Tivoli Storage Manager for Space Management for UNIX and Linux: User's Guide</i>	SC23-9794
<i>IBM Tivoli Storage Manager HSM for Windows Administration Guide</i>	SC23-9795

Table 5. Tivoli Storage Manager data protection publications

Publication title	Order number
<i>IBM Tivoli Storage Manager for Databases: Data Protection for Microsoft SQL Server Installation and User's Guide</i>	GC27-4010
<i>IBM Tivoli Storage Manager for Databases: Data Protection for Oracle for UNIX and Linux Installation and User's Guide</i>	SC27-4019
<i>IBM Tivoli Storage Manager for Databases: Data Protection for Oracle for Windows Installation and User's Guide</i>	SC27-4020
<i>IBM Tivoli Storage Manager for Mail: Data Protection for Microsoft Exchange Server Installation and User's Guide</i>	GC27-4009
<i>IBM Tivoli Storage Manager for Mail: Data Protection for Lotus Domino® UNIX and Linux Installation and User's Guide</i>	SC27-4021
<i>IBM Tivoli Storage Manager for Mail: Data Protection for Lotus Domino for Windows Installation and User's Guide</i>	SC27-4022
<i>IBM Tivoli Storage Manager for Enterprise Resource Planning: Data Protection for SAP Installation and User's Guide for DB2</i>	SC33-6341
<i>IBM Tivoli Storage Manager for Enterprise Resource Planning: Data Protection for SAP Installation and User's Guide for Oracle</i>	SC33-6340
<i>IBM Tivoli Storage Manager for Virtual Environments Installation and User's Guide</i>	SC27-2898
<i>IBM Tivoli Storage Manager for Microsoft SharePoint Guide</i>	N/A

Table 6. IBM Tivoli Storage Manager troubleshooting and tuning publications

Publication title	Order number
<i>IBM Tivoli Storage Manager Problem Determination Guide</i>	GC23-9789
<i>IBM Tivoli Storage Manager Optimizing Performance</i>	GC23-9788
<i>IBM Tivoli Storage Manager Client Messages and Application Programming Interface Return Codes</i>	SC27-2878
<i>IBM Tivoli Storage Manager Server Messages and Error Codes</i>	SC27-2877
<i>IBM Tivoli Storage Manager for Mail: Data Protection for Microsoft Exchange Server Messages</i>	GC27-4011
<i>IBM Tivoli Storage Manager for Databases: Data Protection for Microsoft SQL Server Messages</i>	GC27-4012
<i>IBM Tivoli Storage Manager for Databases: Data Protection for Oracle Messages</i>	SC27-4014

Table 6. IBM Tivoli Storage Manager troubleshooting and tuning publications (continued)

Publication title	Order number
IBM Tivoli Storage Manager for Mail: Data Protection for Lotus Domino Messages	SC27-4015
IBM Tivoli Storage Manager for Enterprise Resource Planning: Data Protection for SAP Messages	SC27-4016

Note: You can find information about IBM System Storage® Archive Manager at the Tivoli Storage Manager v6.3.0 information center.

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 the following websites to sign up for training, ask questions, and interact with others who use IBM storage products.

Tivoli software training and certification

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

Tivoli Support Technical Exchange

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

Storage Management community

Interact with others who use IBM storage management products at <http://www.ibm.com/developerworks/servicemanagement/sm/index.html>

Global Tivoli User Community

Share information and learn from other Tivoli users throughout the world at <http://www.tivoli-ug.org/>.

IBM Education Assistant

View short "how to" recordings designed to help you use IBM software products more effectively at <http://publib.boulder.ibm.com/infocenter/ieduasst/tivv1r0/index.jsp>

Searching knowledge bases

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

Begin by searching the Tivoli Storage Manager Information Center at <http://pic.dhe.ibm.com/infocenter/tsminfo/v6r3>. From this website, you can search the current Tivoli Storage Manager documentation.

Searching the Internet

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

To search multiple Internet resources, go to the IBM support website at <http://www.ibm.com/support/entry/portal/>.

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 website, 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 find problem resolution.

An independent user discussion list, ADSM-L, is hosted by Marist College. You can subscribe by sending an email 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 and Tivoli Storage FlashCopy Manager user communities, go to Service Management Connect (<http://www.ibm.com/developerworks/servicemanagement/sm/index.html>). From there you can find links to product wikis and user communities.

Using IBM Support Assistant

IBM Support Assistant is a complimentary software product that can help you with problem determination. It is available for some Tivoli Storage Manager and Tivoli Storage FlashCopy Manager products.

To learn about which products are supported, go to the IBM Support Assistant download web page at <http://www.ibm.com/software/support/isa/download.html>.

IBM Support Assistant helps you gather support information when you must open a problem management record (PMR), which you can then use to track the problem. The product-specific plug-in modules provide you with the following resources:

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

You can find more information at the IBM Support Assistant website:

<http://www.ibm.com/software/support/isa/>

You can also 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. Find add-ons for specific products at <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 website.

You can determine what fixes are available by checking the IBM software support website 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 product, or a component for which you want to find a fix.
 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 **Sign in to create, manage, or view your subscriptions** in the **Notifications** pane.
2. Sign in using your IBM ID and password. If you do not have an ID and password, click **register now** and complete the registration process.
3. Click **Manage all my subscriptions** in the **Notifications** pane.
4. Click the **Subscribe** tab and then click **Tivoli**.
5. Select the products for which you want to receive notifications and click **Continue**.
6. Specify your notification preferences and click **Submit**.

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.

To obtain help from IBM Software Support, complete the following steps:

1. Ensure that you have completed the following prerequisites:
 - a. Set up a subscription and support contract.
 - b. Determine the business impact of your problem.
 - c. Describe your problem and gather background information.

2. Follow the instructions in “Submitting the problem to IBM Software Support” on page xvii.

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 on operating systems such as AIX or Linux), enroll in IBM Passport Advantage® in one of the following ways:

- **Online:** Go to the Passport Advantage website at <http://www.ibm.com/software/lotus/passportadvantage/>, click **How to enroll**, and follow the instructions.
- **By telephone:** You can call 1-800-IBMSERV (1-800-426-7378) in the United States. For the telephone 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 gathering 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 re-created? If so, what steps led to the failure?
- Have any changes been made to the system? For example, hardware, operating system, networking software, and so on.
- Are you 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 telephone.

Online

Go to the IBM Software Support website 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 telephone

For the telephone number to call in your country, go to the IBM Software Support Handbook at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html> and click **Contacts**.

New for Tivoli Storage Manager Version 6.3.4

This section summarizes changes that have been made to IBM Tivoli Storage Manager Version 6.3.4. These changes affect the Tivoli Storage Manager server, the Operations Center, the Administration Center, Tivoli Monitoring for Tivoli Storage Manager, and the upgrade to Version 6.3 or later. Any updates that have been made to the information since the previous edition are marked with a vertical bar (|) in the margin.

The following installation-related features are new for Tivoli Storage Manager in Version 6.3.4. For a complete list of new Version 6.3.4 features, see the "What's new in the products" topic in the Tivoli Storage Manager information center at <http://pic.dhe.ibm.com/infocenter/tsminfo/v6r3>.

End user license agreement (EULA)

The license agreement no longer needs to be accepted for the Administration Center and for the Tivoli Monitoring for Tivoli Storage Manager feature. The Tivoli Storage Manager Version 6.3 or later server installation wizard now has a separate license agreement for the following products:

- Tivoli Storage Manager
- Tivoli Storage Manager Extended Edition
- System Storage Archive Manager
- Tivoli Storage Manager for Storage Area Networks

Tivoli Storage Manager migration to V6.3.4 or later on Linux x86_64

You can now migrate a Tivoli Storage Manager V5 server that runs on an AIX®, HP-UX, or Solaris operating system to V6.3.4 or later on a Linux x86_64 operating system. Depending on your hardware and software environment, this migration procedure might be useful for achieving server consolidation, load balancing, or standardization on the Linux operating system. For more information about the advantages of migrating the server, see the server database updates overview section in the *Upgrade and Migration Guide for V5 Servers*.

Operations Center V6.4.1 user interface

The V6.4.1 Operations Center includes an Overview page that shows the interaction of Tivoli Storage Manager servers and clients. You can use the Operations Center to identify potential issues at a glance, manage alerts, and access the Tivoli Storage Manager command line. The Administration Center interface is also available, but the Operations Center is the preferred monitoring interface. For more information about the Operations Center, see Part 3, "Installing the Operations Center," on page 151.

Tivoli Storage Manager V6.4 code levels

Tivoli Storage Manager Version 6.4 is made up of the following components and code levels:

- Backup-archive client at V6.4
- Application programming interface (API) at V6.4
- Server at V6.3.4, including Administration Center, Tivoli Monitoring for Tivoli Storage Manager, and device driver components, also at V6.3.4
- Operations Center at V6.4.1

Part 1. Installing and upgrading the server

Install and upgrade the Tivoli Storage Manager server.

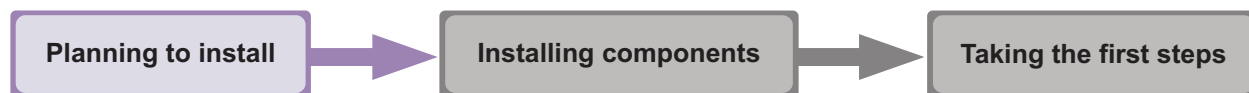


Figure 1. As highlighted in the figure, you are in the planning to install the Tivoli Storage Manager server section. Review this section carefully to ensure that you have the system and other requirements needed to install Tivoli Storage Manager.

Chapter 1. Planning to install the Tivoli Storage Manager server

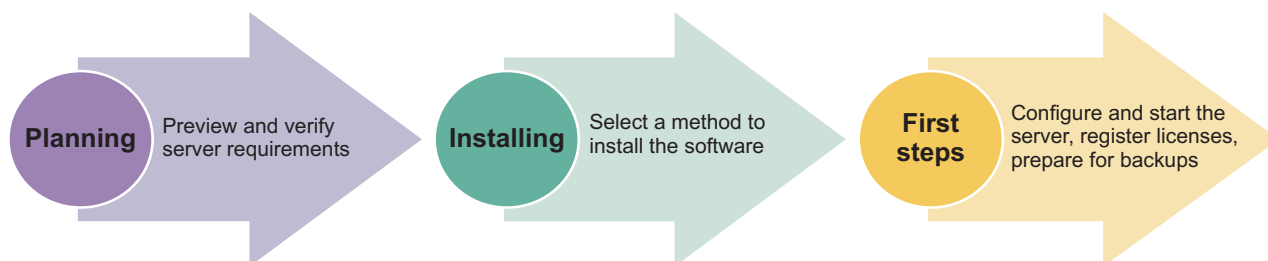
Install the Tivoli Storage Manager server software on the computer that manages storage devices and install the Tivoli Storage Manager client software on every workstation that transfers data to Tivoli Storage Manager server-managed storage.

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

Allow approximately 15 - 30 minutes to install a Tivoli Storage Manager Version 6.3 or later server, using this guide.

An upgrade from V6.1.x, V6.2.x, or V6.3.x to V6.3 or later takes approximately 20 - 50 minutes. Your environment might produce different results than that obtained in the labs.

The following figure illustrates the main parts for installing a new Tivoli Storage Manager server.



What you should know first

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

The following figure illustrates an overview of the installation, upgrade, and migration process.

Installing the Tivoli Storage Manager server

I want to...

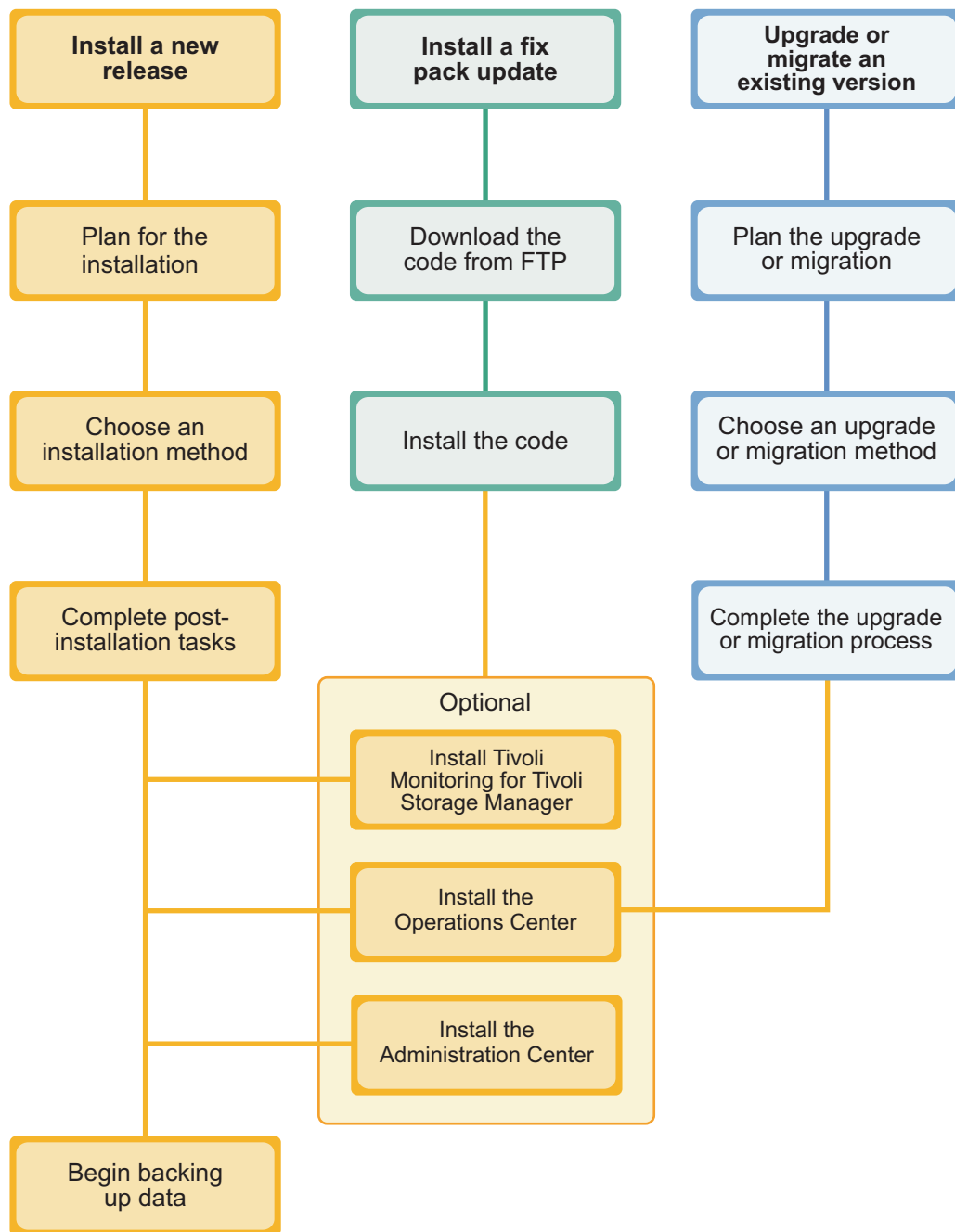


Figure 2. Installation, upgrade, migration overview

Table 7. Upgrade information

To upgrade from this version	To this version	See this information
V6.3 or later	V6.3 or later	Chapter 4, "Installing a Tivoli Storage Manager server fix pack," on page 59
V6.2	V6.3 or later	"Upgrading from Tivoli Storage Manager V6.2 to V6.3 or later" on page 66

Table 7. Upgrade information (continued)

To upgrade from this version	To this version	See this information
V6.1	V6.3 or later	"Upgrading from Tivoli Storage Manager V6.1 to V6.3 or later" on page 71
V5.5	V6.3 or later	<i>Upgrade and Migration Guide for V5 Servers</i>

Restriction: You cannot install and run the Version 6.3 or later 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 6.3 or later server requires the installation and use of the DB2 version that is packaged with the Version 6.3 or later server. No other version of DB2 can exist on the system.

You can install the Tivoli Storage Manager server on a domain controller. The Tivoli Storage Manager server can have heavy processor usage, however, and that might affect and stall other applications.

Experienced DB2 administrators can choose to perform advanced SQL queries and use DB2 tools to monitor the database. Do not, however, 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 6.3 or later server has been built and tested extensively using the data definition language (DDL) and database configuration that Tivoli Storage Manager deploys.

Attention: Do not alter the DB2 software that is installed with Tivoli Storage Manager installation packages and fix packs. Do not install or upgrade to a different version, release, or fix pack of DB2 software because doing so can damage the database.

System requirements for the Tivoli Storage Manager server

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

These tables list the minimum hardware and software requirements for the installation of a Tivoli Storage Manager server. Use these requirements as a starting point. You can use the prerequisite checker to verify most of the requirements. See "Running the installation prerequisite checker" on page 7. You can find the most current information about system requirements at Tivoli Storage Manager Supported Operating Systems.

See *Tivoli Storage Manager Optimizing Performance* for server configuration guidelines and best practices.

Table 8 on page 6 describes the minimum hardware requirements needed for your Windows system. For more details about planning disk space, see "Capacity planning" on page 9.

Installing the Tivoli Storage Manager server

Table 8. Hardware requirements

Type of hardware	Hardware requirements
Hardware	An AMD64 or Intel EMT-64 processor
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 data deduplication or expect a heavy client workload.</p> <p>For optimal performance and to facilitate I/O, specify at least two equally sized containers or Logical Unit Numbers (LUNs) for the database. See <i>Optimizing Performance</i> for more information about the configuration of directories for the database. In addition, each active log and archive log should have its own container or LUN.</p> <p>Ensure that you see the capacity planning section for more details about disk space.</p>
Memory	<ul style="list-style-type: none">• 12 GB.• 16 GB if you are using data deduplication.• At least 32 GB for heavily used servers. Using 32 GB or more of memory enhances performance of the Tivoli Storage Manager server database inventory.• 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.• Node replication processing requires additional memory. Use a minimum of 32 GB of memory for node replication without data deduplication. Node replication with data deduplication requires a minimum of 64 GB of memory.

Software requirements

Table 9 describes the minimum software requirements needed for your Windows system.

Table 9. Software requirements

Type of software	Minimum software requirements
Operating system	<p>One of the following operating systems:</p> <ul style="list-style-type: none">• Microsoft Windows Server 2008: Standard, Enterprise, or Datacenter x64 Edition (64-bit)• Microsoft Windows Server 2008 R2: Standard, Enterprise, or Datacenter Edition (64-bit)• Microsoft Windows 2012 (64-bit)

Table 9. Software requirements (continued)

Type of software	Minimum software requirements
Communication protocol	At least one of the following communication protocols (installed by default with the current Windows operating systems): <ul style="list-style-type: none"> • Named Pipes • TCP/IP Version 4 or Version 6
Web browser	A web browser to retrieve an online installation package. The following browsers are supported: <ul style="list-style-type: none"> • Microsoft Internet Explorer 7.0 or later • Firefox 3.5 or later <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>
System functions	The Windows system functions, such as Device Manager, are supported on the 64-bit Tivoli Storage Manager Console. <p>Normal Windows system functions are available for the 64-bit server using the Manage Computer function of the Windows system.</p>
Other software	Windows 2012 requires that .NET Framework 3.5 is installed and enabled.

Running the installation prerequisite checker

The installation prerequisite checker is an optional tool that verifies the operating system, the amount of free disk space for the installation, and other prerequisites.

To ensure that your system environment is appropriate for the installation, you can run the prerequisite checker before each installation.

Tip: The prerequisite checker verifies only the minimum memory that is necessary. More memory is required for additional tasks.

The prerequisite checker presents a summary of results at the end of the check. Any changes that are required in your environment before the installation are listed. Any new directories that are required for the installation are created.

To run the prerequisite checker, complete the following steps.

1. Ensure that the appropriate installation package is downloaded and that its files are extracted. A prerequisite checker is part of the installation package.
2. Choose the graphical interface (the default) or console method to start the installation, and follow the wizard instructions to complete the installation:
 - Issue this command to start the installation wizard using a graphical interface:
prereqcheck.exe
 - Or, double-click the prereqcheck.exe file.
 - Issue this command to start the installation wizard using the console method:
prereqcheck.exe -i console

Installing the Tivoli Storage Manager server

3. Select the language for the prerequisite checker user interface.
4. In the welcome and disclaimer panels, review the statements and accept them.

If the Prerequisite Results page indicates that your system passed the checks, you are ready to start the installation.

If an error message is shown in the Prerequisite Results page, make the required corrections before continuing with the installation. The summary page lists the errors and directs you to an error log file.

Worksheets for planning details for the Tivoli Storage Manager server

You can use the work sheets to help you plan the amount and location of storage needed for the Tivoli Storage Manager server. You can also use them to keep track of names and user IDs.

See *Tivoli Storage Manager Optimizing Performance* for server configuration guidelines and best practices.

Item	Space required	Number of directories	Location of directories
The database			
Active log			
Archive log			
Optional: Log mirror for the active log			
Optional: Secondary archive log (failover location for archive log)			

Item	Names and user IDs	Location
The <i>instance user ID</i> for the server, which is the ID you use to start and run the Tivoli Storage Manager server		
The <i>home directory</i> for the server, which is the directory that contains the instance user ID		
The database instance name		
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)		
Server name, use a unique name for each server		

Capacity planning

Capacity planning for Tivoli Storage Manager includes managing resources such as the database and recovery log. To maximize resources as part of capacity planning, you must estimate space requirements for the database and the recovery log.

For information about the benefits of deduplication and guidance on how to make effective use of the Tivoli Storage Manager deduplication feature, see *Optimizing Performance*.

Estimating space requirements for the database

To estimate space requirements for the database, you can use the maximum number of files that can be in server storage at one time or you can use storage pool capacity.

Consider using at least 25 GB for the initial database space. Provision file system space appropriately. A database size of 25 GB is adequate for a test environment or a library-manager-only environment. For a production server supporting client workloads, the database size is expected to be larger. If you use random-access disk (DISK) storage pools, more database and log storage space is needed than for sequential-access storage pools.

The maximum size of the Tivoli Storage Manager database is 4 TB.

For information about sizing the database in a production environment that is based on the number of files and on storage pool size, see the following topics.

Estimating database space requirements based on the number of files

If you can estimate the maximum number of files that might be in server storage at a time, you can use that number to estimate space requirements for the database.

To estimate space requirements that is based on the maximum number of files in server storage, use the following guidelines:

- 600 - 1000 bytes for each stored version of a file, including image backups.

Restriction: The guideline does not include space that is used during data deduplication.

- 100 - 200 bytes for each cached file, copy storage pool file, active-data pool file, and deduplicated file.
- Additional space is required for database optimization to support varying data-access patterns and to support server back-end processing of the data. The amount of extra space is equal to 50% of the estimate for the total number of bytes for file objects.

In the following example for a single client, the calculations are based on the maximum values in the preceding guidelines. The examples do not take into account that you might use file aggregation. In general, when you aggregate small files, it reduces the amount of required database space. File aggregation does not affect space-managed files.

1. Calculate the number of file versions. Add each of the following values to obtain the number of file versions:

Installing the Tivoli Storage Manager server

- a. Calculate the number of backed-up files. For example, as many as 500,000 client files might be backed up at a time. In this example, storage policies are set to keep up to three copies of backed up files:

$$500,000 \text{ files} * 3 \text{ copies} = 1,500,000 \text{ files}$$

- b. Calculate the number of archive files. For example, as many as 100,000 client files might be archived copies.

- c. Calculate the number of space-managed files. For example, as many as 200,000 client files might be migrated from client workstations.

Using 1000 bytes per file, the total amount of database space that is required for the files that belong to the client is 1.8 GB:

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

2. Calculate the number of cached files, copy storage-pool files, active-data pool files, and deduplicated files:

- a. Calculate the number of cached copies. For example, caching is enabled in a 5 GB disk storage pool. The high migration threshold of the pool is 90% and the low migration threshold of the pool is 70%. Thus, 20% of the disk pool, or 1 GB, is occupied by cached files.

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

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

- b. Calculate the number of copy storage-pool files. All primary storage pools are backed up to the copy storage pool:

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

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

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

- d. Calculate the number of deduplicated files. Assume that a deduplicated storage pool contains 50,000 files:

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

Based on the preceding calculations, about 0.5 GB of extra database space is required for the client's cached files, copy storage-pool files, active-data pool files, and deduplicated files.

3. Calculate the amount of extra space that is required for database optimization. To provide optimal data access and management by the server, extra database space is required. The amount of extra database space is equal to 50% of the total space requirements for file objects.

$$(1.8 + 0.5) * 50\% = 1.2 \text{ GB}$$

4. Calculate the total amount of database space that is required for the client. The total is approximately 3.5 GB:

$$1.8 + 0.5 + 1.2 = 3.5 \text{ GB}$$

5. Calculate the total amount of database space that is required for all clients. If the client that was used in the preceding calculations is typical and you have 500 clients, for example, you can use the following calculation to estimate the total amount of database space that is required for all clients:

$$500 * 3.5 = 1.7 \text{ TB}$$

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. Periodically monitor your database and adjust its size as necessary.

During normal operations, the Tivoli Storage Manager server might require temporary database space. This space is needed for the following reasons:

- To hold the results of sorting or ordering that are not already being kept and optimized in the database directly. The results are temporarily held in the database for processing.
- To give administrative access to the database through one of the following methods:
 - A DB2 open database connectivity (ODBC) client
 - An Oracle Java™ database connectivity (JDBC) client
 - Structured Query Language (SQL) to the server from an administrative-client command line

Consider using an extra 50 GB of temporary space for every 500 GB of space for file objects and optimization. See the guidelines in the following table. In the example that is used in the preceding step, a total of 1.7 TB of database space is required for file objects and optimization for 500 clients. Based on that calculation, 200 GB is required for temporary space. The total amount of required database space is 1.9 TB.

Database size	Minimum temporary-space requirement
< 500 GB	50 GB
≥ 500 GB and < 1 TB	100 GB
≥ 1 TB and < 1.5 TB	150 GB
≥ 1.5 and < 2 TB	200 GB
≥ 2 and < 3 TB	250 - 300 GB
≥ 3 and < 4 TB	350 - 400 GB

Estimating database space requirements based on storage pool capacity

To estimate database space requirements based on storage pool capacity, use a ratio of 1 - 5%. For example, if you require 200 TB of storage pool capacity, the size of your database is expected to be 2 - 10 TB. As a general rule, make your database as large as possible to prevent running out of space. If you run out of database space, server operations and client-store operations can fail.

The database manager and temporary space

The Tivoli Storage Manager server database manager manages and allocates system memory and disk space for the database. The amount of database space you require depends on the amount of system memory available and the server workload.

The database manager sorts data in a specific sequence, as per the SQL statement that you issue to request the data. Depending on the workload on the server, and if there is more data than the database manager can manage, the data (that is ordered in sequence) is allocated to temporary disk space. Data is allocated to

Installing the Tivoli Storage Manager server

temporary disk space when there is a large result set. The database manager dynamically manages the memory used when data is allocated to temporary disk space.

For example, expiration processing can produce a large result set. If there is not enough system memory on the database to store the result set, some of the data is allocated to temporary disk space. During expiration processing, if a node or file space are selected that are too large to process, the database manager does not have enough memory to sort the data.

To run database operations, consider adding more database space for the following scenarios:

- The database has a small amount of space and the server operation that requires temporary space uses the remaining free space.
- The file spaces are large, or the file spaces has a policy assigned to it which creates many file versions.
- The Tivoli Storage Manager server must run with limited memory. The database uses the Tivoli Storage Manager server main memory to run database operations. However, if there is insufficient memory available, the Tivoli Storage Manager server allocates temporary space on disk to the database. For example, if 10G of memory is available and database operations require 12G of memory, the database uses temporary space.
- An out of database space error is displayed when you deploy a Tivoli Storage Manager V6 server. Monitor the server activity log for messages related to database space.

Important: Do not change the DB2 software that is installed with the Tivoli Storage Manager installation packages and fix packs. Do not install or upgrade to a different version, release, or fix pack, of DB2 software to avoid damage to the database.

Recovery log space requirements

In Tivoli Storage Manager, the term *recovery log* comprises the active log, the archive log, the active log mirror, and the archive failover log. The amount of space that you require for the recovery log depends on various factors, including, for example, the amount of client activity with the server.

Active and archive log space

When you estimate space requirements for active and archive logs, include some extra space for contingencies such as occasional heavy workloads and failovers.

In Tivoli Storage Manager servers V6.1 and later, the active log can be a maximum size of 128 GB. The archive log size is limited to the size of the file system that it is installed on.

Use the following general guidelines when you estimate the size of the active log:

- The suggested starting size for the active log is 16 GB.
- Ensure that the active log is at least large enough for the amount of concurrent activity that the server typically handles. As a precaution, try to anticipate the largest amount of work that the server manages at one time. Provision the active log with extra space that can be used if needed. Consider using 20% of extra space.

- Monitor used and available active log space. Adjust the size of the active log as needed, depending upon factors such as client activity and the level of server operations.
- Ensure that the directory that holds the active log is as large as, or larger than, the size of the active log. A directory that is larger than the active log can accommodate failovers, if they occur.
- Ensure that the file system that contains the active log directory has at least 8 GB of free space for temporary log movement requirements.

The suggested starting size for the archive log is 48 GB.

The archive log directory must be large enough to contain the log files that are generated since the previous full backup. For example, if you perform a full backup of the database every day, the archive log directory must be large enough to hold the log files for all the client activity that occurs during 24 hours. To recover space, the server deletes obsolete archive log files after a full backup of the database. If the archive log directory becomes full and a directory for archive failover logs does not exist, log files remain in the active log directory. This condition can cause the active log directory to fill up and stop the server. When the server restarts, some of the existing active-log space is released.

After the server is installed, you can monitor archive log utilization and the space in the archive log directory. If the space in the archive log directory fills up, it can cause the following problems:

- The server is unable to perform full database backups. Investigate and resolve this problem.
- Other applications write to the archive log directory, exhausting the space that is required by the archive log. Do not share archive log space with other applications including other Tivoli Storage Manager servers. Ensure that each server has a separate storage location that is owned and managed by that specific server.

For guidance about the layout and tuning of the active log and archive log, see *Optimizing Performance*.

Example: Estimating active and archive log sizes for basic client-store operations:

Basic client-store operations include backup, archive, and space management. Log space must be sufficient to handle all store transactions that are in progress at one time.

To determine the sizes of the active and archive logs for basic client-store operations, use the following calculation:

$$\begin{aligned} &\text{number of clients} \times \text{files stored during each transaction} \\ &\times \text{log space needed for each file} \end{aligned}$$

This calculation is used in the example in the following table.

Table 10. Basic client-store operations

Item	Example values	Description
Maximum number of client nodes that back up, archive, or migrate files concurrently at any time	300	The number of client nodes that back up, archive, or migrate files every night.

Installing the Tivoli Storage Manager server

Table 10. Basic client-store operations (continued)

Item	Example values	Description
Files stored during each transaction	4096	The default value of the server option TXNGROUPMAX is 4096.
Log space that is required for each file	3053 bytes	<p>The value of 3053 bytes for each file in a transaction represents the log bytes that are needed when backing up files from a Windows client where the file names are 12 - 120 bytes.</p> <p>This value is based on the results of tests performed under laboratory conditions. The tests consisted of backup-archive clients performing backup operations to a random-access disk (DISK) storage pool. DISK pools result in more log use than sequential-access storage pools. Consider a value larger than 3053 bytes if the data being stored has file names that are longer than 12 - 120 bytes.</p>
Active log: Suggested size	19.5 GB ¹	<p>Use the following calculation to determine the size of the active log. One GB equals 1,073,741,824 bytes.</p> <p>(300 clients x 4096 files stored during each transaction x 3053 bytes for each file) ÷ 1,073,741,824 bytes = 3.5 GB</p> <p>Increase that amount by the suggested starting size of 16 GB:</p> <p>3.5 + 16 = 19.5 GB</p>
Archive log: Suggested size	58.5 GB ¹	<p>Because of the requirement to be able to store archive logs across three server database-backup cycles, multiply the estimate for the active log by 3 to estimate the total archive log requirement.</p> <p>3.5 x 3 = 10.5 GB</p> <p>Increase that amount by the suggested starting size of 48 GB:</p> <p>10.5 + 48 = 58.5 GB</p>
<p>¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that does not use deduplication, 16 GB is the suggested minimum size for an active log. The suggested minimum size for an archive log in a production environment that does not use deduplication is 48 GB. If you substitute values from your environment and the results are larger than 16 GB and 48 GB, use your results to size the active log and archive log.</p> <p>Monitor your logs and adjust their size if necessary.</p>		

Example: Estimating active and archive log sizes for clients that use multiple sessions:

If the client option RESOURCEUTILIZATION is set to a value that is greater than the default, the concurrent workload for the server increases.

To determine the sizes of the active and archive logs when clients use multiple sessions, use the following calculation:

number of clients x sessions for each client x files stored
during each transaction x log space needed for each file

This calculation is used in the example in the following table.

Table 11. Multiple client sessions

Item	Example values		Description
Maximum number of client nodes that back up, archive, or migrate files concurrently at any time	300	1000	The number of client nodes that back up, archive, or migrate files every night.
Possible sessions for each client	3	3	The setting of the client option RESOURCEUTILIZATION is larger than the default. Each client session runs a maximum of three sessions in parallel.
Files stored during each transaction	4096	4096	The default value of the server option TXNGROUPMAX is 4096.
Log space that is required for each file	3053	3053	<p>The value of 3053 bytes for each file in a transaction represents the log bytes needed when backing up files from a Windows client where the file names are 12 - 120 bytes.</p> <p>This value is based on the results of tests performed under laboratory conditions. Tests consisted of clients performing backup operations to a random-access disk (DISK) storage pool. DISK pools result in more log use than sequential-access storage pools. Consider a value larger than 3053 bytes if the data being stored has file names that are longer than 12 - 120 bytes.</p>
Active log: Suggested size	26.5 GB ¹	51 GB ¹	<p>The following calculation was used for 300 clients. One GB equals 1,073,741,824 bytes.</p> <p>(300 clients x 3 sessions for each client x 4096 files stored during each transaction x 3053 bytes for each file) ÷ 1,073,741,824 = 10.5 GB</p> <p>Increase that amount by the suggested starting size of 16 GB:</p> <p>10.5 + 16 = 26.5 GB</p> <p>The following calculation was used for 1000 clients. One GB equals 1,073,741,824 bytes.</p> <p>(1000 clients x 3 sessions for each client x 4096 files store during each transaction x 3053 bytes for each file) ÷ 1,073,741,824 = 35 GB</p> <p>Increase that amount by the suggested starting size of 16 GB:</p> <p>35 + 16 = 51 GB</p>
Archive log: Suggested size	79.5 GB ¹	153 GB ¹	<p>Because of the requirement to be able to store archive logs across three server-database backup cycles, the estimate for the active log is multiplied by 3:</p> <p>10.5 x 3 = 31.5 GB</p> <p>35 x 3 = 105 GB</p> <p>Increase those amounts by the suggested starting size of 48 GB:</p> <p>31.5 + 48 = 79.5 GB</p> <p>105 + 48 = 153 GB</p>

Installing the Tivoli Storage Manager server

Table 11. Multiple client sessions (continued)

Item	Example values	Description
¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that does not use deduplication, 16 GB is the suggested minimum size for an active log. The suggested minimum size for an archive log in a production environment that does not use deduplication is 48 GB. If you substitute values from your environment and the results are larger than 16 GB and 48 GB, use your results to size the active log and archive log.		
Monitor your active log and adjust its size if necessary.		

Example: Estimating active and archive log sizes for simultaneous write operations:

If client backup operations use storage pools that are configured for simultaneous write, the amount of log space that is required for each file increases.

The log space that is required for each file increases by about 200 bytes for each copy storage pool that is used for a simultaneous write operation. In the example in the following table, data is stored to two copy storage pools in addition to a primary storage pool. The estimated log size increases by 400 bytes for each file. If you use the suggested value of 3053 bytes of log space for each file, the total number of required bytes is 3453.

This calculation is used in the example in the following table.

Table 12. Simultaneous write operations

Item	Example values	Description
Maximum number of client nodes that back up, archive, or migrate files concurrently at any time	300	The number of client nodes that back up, archive, or migrate files every night.
Files stored during each transaction	4096	The default value of the server option TXNGROUPMAX is 4096.
Log space that is required for each file	3453 bytes	3053 bytes plus 200 bytes for each copy storage pool. The value of 3053 bytes for each file in a transaction represents the log bytes that are needed when backing up files from a Windows client where the file names are 12 - 120 bytes. This value is based on the results of tests performed under laboratory conditions. The tests consisted of backup-archive clients performing backup operations to a random-access disk (DISK) storage pool. DISK pools result in more log use than sequential-access storage pools. Consider a value larger than 3053 bytes if the data being stored has file names that are longer than 12 - 120 bytes.
Active log: Suggested size	20 GB ¹	Use the following calculation to determine the size of the active log. One GB equals 1,073,741,824 bytes. (300 clients x 4096 files stored during each transaction x 3453 bytes for each file) ÷ 1,073,741,824 bytes = 4.0 GB Increase that amount by the suggested starting size of 16 GB: 4 + 16 = 20 GB

Table 12. Simultaneous write operations (continued)

Item	Example values	Description
Archive log: Suggested size	60 GB ¹	<p>Because of the requirement to be able to store archive logs across three server database-backup cycles, multiply the estimate for the active log by 3 to estimate the archive log requirement:</p> $4 \text{ GB} \times 3 = 12 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $12 + 48 = 60 \text{ GB}$
<p>¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that does not use deduplication, 16 GB is the suggested minimum size for an active log. The suggested minimum size for an archive log in a production environment that does not use deduplication is 48 GB. If you substitute values from your environment and the results are larger than 16 GB and 48 GB, use your results to size the active log and archive log.</p> <p>Monitor your logs and adjust their size if necessary.</p>		

Example: Estimating active and archive log sizes for basic client store operations and server operations:

Migration of data in server storage, identification processes for data deduplication, reclamation, and expiration might run concurrently with client store operations. Administrative tasks such as administrative commands or SQL queries from administrative clients can also run concurrently with client store operations. Server operations and administrative tasks that run concurrently can increase the active log space that is required.

For example, migration of files from the random-access (DISK) storage pool to a sequential-access disk (FILE) storage pool uses approximately 110 bytes of log space for each file that is migrated. For example, suppose that you have 300 backup-archive clients and each one of them backs up 100,000 files every night. The files are initially stored on DISK and then migrated to a FILE storage pool. To estimate the amount of active log space that is required for the data migration, use the following calculation. The number of clients in the calculation represents the maximum number of client nodes that back up, archive, or migrate files concurrently at any time.

$$300 \text{ clients} \times 100,000 \text{ files for each client} \times 110 \text{ bytes} = 3.1 \text{ GB}$$

Add this value to the estimate for the size of the active log that calculated for basic client store operations.

Example: Estimating active and archive log sizes under conditions of extreme variation:

Problems with running out of active log space can occur if you have many transactions that complete quickly and some transactions that take much longer to complete. A typical case occurs when many workstation or file-server backup sessions are active and a few very large database server-backup sessions are active. If this situation applies to your environment, you might need to increase the size of the active log so that the work completes successfully.

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Example: Estimating archive log sizes with full database backups:

The Tivoli Storage Manager server deletes unnecessary files from the archive log only when a full database backup occurs. Consequently, when you estimate the space that is required for the archive log, you must also consider the frequency of full database backups.

For example, if a full database backup occurs once a week, the archive log space must be able to contain the information in the archive log for a full week.

The difference in archive log size for daily and full database backups is shown in the example in the following table.

Table 13. Full database backups

Item	Example values	Description
Maximum number of client nodes that back up, archive, or migrate files concurrently at any time	300	The number of client nodes that back up, archive, or migrate files every night.
Files stored during each transaction	4096	The default value of the server option TXNGROUPMAX is 4096.
Log space that is required for each file	3453 bytes	<p>3053 bytes for each file plus 200 bytes for each copy storage pool.</p> <p>The value of 3053 bytes for each file in a transaction represents the log bytes needed when backing up files from a Windows client where the file names are 12 - 120 bytes.</p> <p>This value is based on the results of tests performed under laboratory conditions. Tests consisted of clients performing backup operations to a random-access disk (DISK) storage pool. DISK pools result in more log use than sequential-access storage pools. Consider a value larger than 3053 bytes if the data being stored has file names that are longer than 12 - 120 bytes.</p>
Active log: Suggested size	20 GB ¹	<p>Use the following calculation to determine the size of the active log. One GB equals 1,073,741,824 bytes.</p> <p>$(300 \text{ clients} \times 4096 \text{ files per transaction} \times 3453 \text{ bytes per file}) \div 1,073,741,824 \text{ bytes} = 4.0 \text{ GB}$</p> <p>Increase that amount by the suggested starting size of 16 GB:</p> <p>$4 + 16 = 20 \text{ GB}$</p>
Archive log: Suggested size with a full database backup every day	60 GB ¹	<p>Because of the requirement to be able to store archive logs across three backup cycles, multiply the estimate for the active log by 3 to estimate the total archive log requirement:</p> <p>$4 \text{ GB} \times 3 = 12 \text{ GB}$</p> <p>Increase that amount by the suggested starting size of 48 GB:</p> <p>$12 + 48 = 60 \text{ GB}$</p>

Table 13. Full database backups (continued)

Item	Example values	Description
Archive log: Suggested size with a full database every week	132 GB ¹	<p>Because of the requirement to be able to store archive logs across three server database-backup cycles, multiply the estimate for the active log by 3 to estimate the total archive log requirement. Multiply the result by the number of days between full database backups:</p> $(4 \text{ GB} \times 3) \times 7 = 84 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $84 + 48 = 132 \text{ GB}$
<p>¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that does not use deduplication, 16 GB is the suggested minimum size for an active log. The suggested starting size for an archive log in a production environment that does not use deduplication is 48 GB. If you substitute values from your environment and the results are larger than 16 GB and 48 GB, use your results to size the active log and archive log.</p> <p>Monitor your logs and adjust their size if necessary.</p>		

Example: Estimating active and archive log sizes for data deduplication operations:

If you deduplicate data, you must consider its effects on space requirements for active and archive logs.

The following factors affect requirements for active and archive log space:

The amount of deduplicated data

The effect of data deduplication on the active log and archive log space depends on the percentage of data that is eligible for deduplication. If the percentage of data that can be deduplicated is relatively high, more log space is required.

The size and number of extents

Approximately 1,500 bytes of active log space are required for each extent that is identified by a duplicate-identification process. For example, if 250,000 extents are identified by a duplicate-identification process, the estimated size of the active log is 358 MB:

250,000 extents identified during each process x 1,500 bytes
for each extent = 358 MB

Consider the following scenario. Three hundred backup-archive clients back up 100,000 files each night. This activity creates a workload of 30,000,000 files. The average number of extents for each file is two. Therefore, the total number of extents is 60,000,000, and the space requirement for the archive log is 84 GB:

60,000,000 extents x 1,500 bytes for each extent = 84 GB

A duplicate-identification process operates on aggregates of files. An aggregate consists of files that are stored in a given transaction, as specified by the TXNGROUPMAX server option. Suppose that the TXNGROUPMAX server option is set to the default of 4096. If the average number of extents for each file is two, the total number of extents in each aggregate is 8192, and the space required for the active log is 12 MB:

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8192 extents in each aggregate x 1500 bytes for each extent =
12 MB

The timing and number of the duplicate-identification processes

The timing and number of duplicate-identification processes also affects the size of the active log. Using the 12 MB active-log size that was calculated in the preceding example, the concurrent load on the active log is 120 MB if 10 duplicate-identification processes are running in parallel:

12 MB for each process x 10 processes = 120 MB

File size

Large files that are processed for duplicate identification can also affect the size of the active log. For example, suppose that a backup-archive client backs up an 80 GB, file-system image. This object can have a high number of duplicate extents if, for example, the files included in the file system image were backed up incrementally. For example, assume that a file system image has 1.2 million duplicate extents. The 1.2 million extents in this large file represent a single transaction for a duplicate-identification process. The total space in the active log that is required for this single object is 1.7 GB:

1,200,000 extents x 1,500 bytes for each extent = 1.7 GB

If other, smaller duplicate-identification processes occur at the same time as the duplicate-identification process for a single large object, the active log might not have enough space. For example, suppose that a storage pool is enabled for deduplication. The storage pool has a mixture of data, including many relatively small files that range from 10 KB to several hundred KB. The storage pool also has few large objects that have a high percentage of duplicate extents.

To take into account not only space requirements but also the timing and duration of concurrent transactions, increase the estimated size of the active log by a factor of two. For example, suppose that your calculations for space requirements are 25 GB (23.3 GB + 1.7 GB for deduplication of a large object). If deduplication processes are running concurrently, the suggested size of the active log is 50 GB. The suggested size of the archive log is 150 GB.

The examples in the following tables show calculations for active and archive logs. The example in the first table uses an average size of 700 KB for extents. The example in the second table uses an average size of 256 KB. As the examples show, the average deduplicate-extent size of 256 KB indicates a larger estimated size for the active log. To minimize or prevent operational problems for the server, use 256 KB to estimate the size of the active log in your production environment.

Table 14. Average duplicate-extent size of 700 KB

Item	Example values		Description
Size of largest single object to deduplicate	800 GB	4 TB	The granularity of processing for deduplication is at the file level. Therefore, the largest single file to deduplicate represents the largest transaction and a correspondingly large load on the active and archive logs.
Average size of extents	700 KB	700 KB	The deduplication algorithms use a variable block method. Not all deduplicated extents for a given file are the same size, so this calculation assumes an average size for extents.

Table 14. Average duplicate-extent size of 700 KB (continued)

Item	Example values		Description
Extents for a given file	1,198,372 bits	6,135,667 bits	<p>Using the average extent size (700 KB), these calculations represent the total number of extents for a given object.</p> <p>The following calculation was used for an 800 GB object: $(800 \text{ GB} \div 700 \text{ KB}) = 1,198,372 \text{ bits}$</p> <p>The following calculation was used for a 4 TB object: $(4 \text{ TB} \div 700 \text{ KB}) = 6,135,667 \text{ bits}$</p>
Active log: Suggested size that is required for the deduplication of a single large object during a single duplicate-identification process	1.7 GB	8.6 GB	The estimated active log space that are needed for this transaction.
Active log: Suggested total size	66 GB ¹	79.8 GB ¹	<p>After considering other aspects of the workload on the server in addition to deduplication, multiply the existing estimate by a factor of two. In these examples, the active log space required to deduplicate a single large object is considered along with previous estimates for the required active log size.</p> <p>The following calculation was used for multiple transactions and an 800 GB object:</p> $(23.3 \text{ GB} + 1.7 \text{ GB}) \times 2 = 50 \text{ GB}$ <p>Increase that amount by the suggested starting size of 16 GB:</p> $50 + 16 = 66 \text{ GB}$ <p>The following calculation was used for multiple transactions and a 4 TB object:</p> $(23.3 \text{ GB} + 8.6 \text{ GB}) \times 2 = 63.8 \text{ GB}$ <p>Increase that amount by the suggested starting size of 16 GB:</p> $63.8 + 16 = 79.8 \text{ GB}$
Archive log: Suggested size	198 GB ¹	239.4 GB ¹	<p>Multiply the estimated size of the active log by a factor of 3.</p> <p>The following calculation was used for multiple transactions and an 800 GB object:</p> $50 \text{ GB} \times 3 = 150 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $150 + 48 = 198 \text{ GB}$ <p>The following calculation was used for multiple transactions and a 4 TB object:</p> $63.8 \text{ GB} \times 3 = 191.4 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $191.4 + 48 = 239.4 \text{ GB}$

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Table 14. Average duplicate-extent size of 700 KB (continued)

Item	Example values	Description
¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that uses deduplication, 32 GB is the suggested minimum size for an active log. The suggested minimum size for an archive log in a production environment that uses deduplication is 96 GB. If you substitute values from your environment and the results are larger than 32 GB and 96 GB, use your results to size the active log and archive log.		
Monitor your logs and adjust their size if necessary.		

Table 15. Average duplicate-extent size of 256 KB

Item	Example values		Description
Size of largest single object to deduplicate	800 GB	4 TB	The granularity of processing for deduplication is at the file level. Therefore, the largest single file to deduplicate represents the largest transaction and a correspondingly large load on the active and archive logs.
Average size of extents	256 KB	256 KB	The deduplication algorithms use a variable block method. Not all deduplicated extents for a given file are the same size, so this calculation assumes an average extent size.
Extents for a given file	3,276,800 bits	16,777,216 bits	Using the average extent size, these calculations represent the total number of extents for a given object. The following calculation was used for multiple transactions and an 800 GB object: $(800 \text{ GB} \div 256 \text{ KB}) = 3,276,800 \text{ bits}$ The following calculation was used for multiple transactions and a 4 TB object: $(4 \text{ TB} \div 256 \text{ KB}) = 16,777,216 \text{ bits}$
Active log: Suggested size that is required for the deduplication of a single large object during a single duplicate-identification process	4.5 GB	23.4 GB	The estimated size of the active log space that is required for this transaction.

Table 15. Average duplicate-extent size of 256 KB (continued)

Item	Example values		Description
Active log: Suggested total size	71.6 GB ¹	109.4 GB ¹	<p>After considering other aspects of the workload on the server in addition to deduplication, multiply the existing estimate by a factor of 2. In these examples, the active log space required to deduplicate a single large object is considered along with previous estimates for the required active log size.</p> <p>The following calculation was used for multiple transactions and an 800 GB object:</p> $(23.3 \text{ GB} + 4.5 \text{ GB}) \times 2 = 55.6 \text{ GB}$ <p>Increase that amount by the suggested starting size of 16 GB:</p> $55.6 + 16 = 71.6 \text{ GB}$ <p>The following calculation was used for multiple transactions and a 4 TB object:</p> $(23.3 \text{ GB} + 23.4 \text{ GB}) \times 2 = 93.4 \text{ GB}$ <p>Increase that amount by the suggested starting size of 16 GB:</p> $93.4 + 16 = 109.4 \text{ GB}$
Archive log: Suggested size	214.8 GB ¹	328.2 GB ¹	<p>The estimated size of the active log multiplied by a factor of 3.</p> <p>The following calculation was used for an 800 GB object:</p> $55.6 \text{ GB} \times 3 = 166.8 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $166.8 + 48 = 214.8 \text{ GB}$ <p>The following calculation was used for a 4 TB object:</p> $93.4 \text{ GB} \times 3 = 280.2 \text{ GB}$ <p>Increase that amount by the suggested starting size of 48 GB:</p> $280.2 + 48 = 328.2 \text{ GB}$
<p>¹ The example values in this table are used only to illustrate how the sizes for active logs and archive logs are calculated. In a production environment that uses deduplication, 32 GB is the suggested minimum size for an active log. The suggested minimum size for an archive log in a production environment that uses deduplication is 96 GB. If you substitute values from your environment and the results are larger than 32 GB and 96 GB, use your results to size the active log and archive log.</p> <p>Monitor your logs and adjust their size if necessary.</p>			

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Active-log mirror space

The active log can be mirrored so that the mirrored copy can be used if the active log files cannot be read. There can be only one active log mirror.

Creating a log mirror is a suggested option. If you increase the size of the active log, the log mirror size is increased automatically. 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.

If the mirror log directory becomes full, the server issues error messages to the activity log and to the db2diag.log. Server activity continues.

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.

Server naming best practices

Use these descriptions as a reference when you install or upgrade a Tivoli Storage Manager server.

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. The standard way to run the server is 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 is a directory that contains files specifically for a server instance (the server options file and other server-specific files). It 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`

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

- The server options file, `dsmserv.opt`
- The server key database file, `cert.kdb`, and the `.arm` files (used by clients and other servers to import the Secure Sockets Layer certificates of the server)
- 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)

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.

The server name is also used when you add the server to the Operations Center so that it can be managed using that interface. Use a unique name for each server. For easy identification in the Operations 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 the *Administrator's Guide*.

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Directories for database space and recovery log

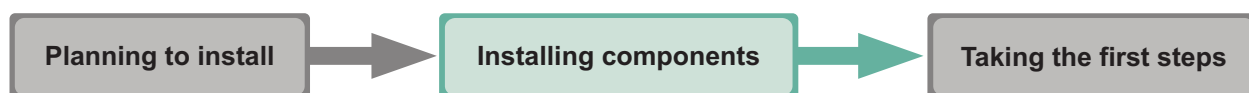
The directories can be named according to local practices. For easier identification, consider using names that tie the directories to the server instance.

For example, for the archive log:

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

Chapter 2. Installing the Tivoli Storage Manager server components

To install the Tivoli Storage Manager 6.3 or later server, 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), the database (DB2), and the Global Security Kit (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

See the *Storage Agent User's Guide* for more details about storage agents.

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 **Start**. 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=swg24030522>
 - Tivoli Storage Manager Extended Edition: <http://www.ibm.com/support/docview.wss?uid=swg24030528>
 - System Storage Archive Manager: <http://www.ibm.com/support/docview.wss?uid=swg24030531>
 - b. Change to the directory where you placed the executable file.

Tip: In the next step, the files are extracted to the current directory. Be sure to extract the installation files to an empty directory. Do not extract to a directory that contains previously extracted files, or any other files.

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- 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. Optional: After all the files are extracted, locate this file and run it to ensure that your system meets all requirements:

`prereqcheck.exe`

See “Running the installation prerequisite checker” on page 7 for details.

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

Installation wizard

“Installing Tivoli Storage Manager by using the installation wizard”

Command-line console wizard

“Installing Tivoli Storage Manager by using the console installation wizard” on page 29

Silent mode

“Installing Tivoli Storage Manager in silent mode” on page 30

5. After you install Tivoli Storage Manager and before you customize it for your use, go to the Tivoli Storage Manager website: 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 by using the installation wizard

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

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

1. Verify that the operating system is set to the language that you require. By default, the language of the operating system is the language of the installation wizard.

If you plan to select a different language for the wizard, you might have to change the language of the operating system. By setting the operating system to an ASCII language, such as English or Spanish, you can select an ASCII language for the wizard later in the installation process. By setting the operating system to a non-ASCII language, such as Simplified Chinese, you can select a non-ASCII language later in the installation process.

For information about setting the language of the operating system, see the operating system documentation.

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

`install.exe`

Or, in the directory where the installation files were extracted, double-click the `install.exe` file.

To start the wizard and save your responses to later use for a silent installation, enter the following command and specify the `-r` option.

`install.exe -r C:\path_name\response.rsp`

where *path_name* is the full directory path to where you want the response file to be created. If you do not specify a fully qualified name, the response file is placed in a temporary directory.

3. Select the language for your installation and follow the wizard, selecting **Next** to step through the wizard.

Select the product that you are entitled to use and a license agreement is displayed. You can select only one product on the page. If you select Tivoli Storage Manager, Tivoli Storage Manager Extended Edition, or System Storage Archive Manager, you are asked if you will be using LAN-free or library sharing. If you select **YES**, you must accept the Tivoli Storage Manager for Storage Area Networks license agreement. This is in addition to the license for the product that you chose on the previous page.

Select the components that you want to install. Components include the server, languages, license, device driver, and storage agent. There is no default, so you must make a selection. If you previously installed a server, ensure that you select the same directory when you install a language package, 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.

The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and IBM Global Security Kit (GSKit) Version 8 are automatically installed when you select the server component.

If there were any errors during the installation, the summary page lists the errors and directs you to an error log file. The log is in the following directory:

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 37.

Installing Tivoli Storage Manager by using the console installation wizard

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

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

1. Verify that the operating system is set to the language that you require. By default, the language of the operating system is the language of the installation wizard.

If you plan to select a different language for the wizard, you might have to change the language of the operating system. By setting the operating system to an ASCII language, such as English or Spanish, you can select an ASCII language for the wizard later in the installation process. By setting the operating system to a non-ASCII language, such as Simplified Chinese, you can select a non-ASCII language later in the installation process.

For information about setting the language of the operating system, see the operating system documentation.

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

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```
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:\path_name\response.rsp
```

where *path_name* is the full directory path to where you want the response file to be created. If you do not specify a fully qualified name, the response file is placed in a temporary directory.

The Tivoli Storage Manager installation wizard starts.

3. Select the language for your installation and follow the wizard, selecting **Next** to step through the wizard.

Select the product that you are entitled to use and a license agreement is displayed. You can select only one product on the page. If you select Tivoli Storage Manager, Tivoli Storage Manager Extended Edition, or System Storage Archive Manager, you are asked if you will be using LAN-free or library sharing. If you select **YES**, you must accept the Tivoli Storage Manager for Storage Area Networks license agreement. This is in addition to the license for the product that you chose on the previous page.

Select the components that you want to install. Components include the server, languages, license, device driver, and storage agent. There is no default, so you must make a selection. If you previously installed a server, ensure that you select the same directory when you install a language package, 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.

The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and IBM Global Security Kit (GSKit) Version 8 are automatically installed when you select the server component.

If there were any errors during the installation, the summary page lists the errors and directs you to an error log file. The log is in the following directory:

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 37.

Installing Tivoli Storage Manager in silent mode

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

Pass the variables in Table 16 on page 31 into this file to define the silent installation:

```
install.exe
```

Table 16. Variables for the silent installation

Variable	Description
<ul style="list-style-type: none"> • -DIBM_TSM_LICENSE_ACCEPTED=true • -DIBM_TSME_LICENSE_ACCEPTED=true • -DIBM_SSAM_LICENSE_ACCEPTED=true • -DIBM_TSMSAN_LICENSE_ACCEPTED=true (required)	<p>Specify one or two variables or the installation stops. It also stops if you specify more than two variables. The wizard installs the license agreement for the Tivoli Storage Manager product that is selected.</p> <p>Tip: If two products are specified, the wizard checks that one of them is the Tivoli Storage Manager for Storage Area Networks license: IBM_TSMSAN_LICENSE_ACCEPTED=true. If one variable is not, the wizard stops.</p>
<p>For command line: -DINSTANCE_CRED="<i>instance1 userid1 password1, instance2 userid2 password2</i>" (required for reinstallation only)</p> <p>For response file: INSTANCE_CRED=<i>instance1 userid1 password1, instance2 userid2 password2</i> (required for reinstallation only)</p>	<p>Enter the instance credentials used by the installation wizard to redefine the database instance.</p> <p>Use quotation marks around the credentials when you pass them into the command line. Specify multiple instances by separating them with a comma.</p> <p>Tip: An instance cannot be in both the INSTANCE_CRED and the INSTANCE_OMIT parameters. All of the instances that exist when an installation package is reinstalled must be listed in either the INSTANCE_CRED or the INSTANCE_OMIT parameters. Or, the silent installation fails.</p>
<p>For command line:- DINSTANCE_OMIT="<i>instance3, instance4</i>" (optional for reinstallation only)</p> <p>For response file: INSTANCE_OMIT=<i>instance3, instance4</i> (optional for reinstallation only)</p>	<p>Enter any instances that will not be recreated as part of the installation. Use this variable if you have an instance that exists but is not used. Use it if you have removed the instance user ID, forgotten the password, or otherwise do not want to create the instance as part of a reinstallation.</p> <p>Use quotation marks around the credentials when you pass them into the command line. Specify multiple instances by separating them with a comma.</p> <p>Tip: An instance cannot be in both the INSTANCE_CRED and the INSTANCE_OMIT parameters. All of the instances that exist when an installation package is reinstalled must be listed in either the INSTANCE_CRED or the INSTANCE_OMIT parameters. Or, the silent installation fails.</p>
-DINSTALL_DEVICES=1 (optional)	Install the Tivoli Storage Manager device driver.

Installing the Tivoli Storage Manager server

Table 16. Variables for the silent installation (continued)

Variable	Description
-DINSTALL_LICENSE=1 (required for base packages)	Install the Tivoli Storage Manager server license component. This variable should be specified only if the package being installed includes Tivoli Storage Manager server license files or the installation might fail. This option is typically required only for a first-time installation of the base release package. This option should not be used when installing most fix packs and interim fix packages because they do not include the server licenses.
-DUSER_INSTALL_DIR= <i>install_directory</i> (optional)	Specify the installation directory if you want to change it. The default directory is C:\Program Files\Tivoli\TSM.
-DINSTALL_SERVER=1 (optional)	Install the Tivoli Storage Manager server component.
-DINSTALL_STAGENT=1 (optional)	Install the Tivoli Storage Manager storage agent.
-DINSTALL_language_package=1 (optional)	<p>Install a specific language package.</p> <p>You can install the following server language-packages during the silent installation, using these variables:</p> <ul style="list-style-type: none">• INSTALL_GERMAN• INSTALL_SPANISH• INSTALL_FRENCH• INSTALL_ITALIAN• INSTALL_BRPORTUGUESE• INSTALL_KOREAN• INSTALL_JAPANESE• INSTALL_RUSSIAN• INSTALL_SCHINESE• INSTALL_TCHINESE <p>For example, to install the German language package, use this variable:</p> <p>-DINSTALL_GERMAN=1</p>

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 33.

- To enable a component during silent installation, append it to the **install.exe** command on a single line. For example:

```
install.exe -i silent
-DIBM_TSM_LICENSE_ACCEPTED=true
-DINSTALL_SERVER=1 -DINSTALL_LICENSE=1
-DINSTALL_ENGLISHUTF8=1
```

Or, for a reinstallation:

```
install.exe -i silent -DINSTANCE_CRED="server1 server1 server1"  
-DINSTANCE_OMIT="server2"  
-DIBM_TSM_LICENSE_ACCEPTED=true -DINSTALL_SERVER=1
```

- Alternatively, the component variables can be placed into a response file. The path to this response file can then be passed into the `install.exe` command. To create this file, use the same variables that are in Table 16 on page 31.

Remove the `-D` and separate the options on individual lines. Do not use quotation marks. For example:

```
INSTANCE_CRED=server1 server1 server1  
INSTANCE_OMIT=server2  
IBM_product_LICENSE_ACCEPTED=true  
INSTALL_SERVER=1  
INSTALL_SPANISH=1
```

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

```
install.exe -i silent -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. 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 package, 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 37.

Installing silently using a batch script

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

To create and run a batch script, complete the following steps:

1. Create a file and name it `install.bat`.

Restriction: The file name must end with `.bat`, not `.bat.txt`.

2. Choose an installation option (with or without a response file). Enter the command into the `install.bat` file and save the file. For example:

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

3. To run the batch file, open a command prompt window. Issue this command:

```
install.bat
```

4. After the installation is completed, issue the following command to retrieve the return code:

```
echo %ERRORLEVEL%
```

Fix any 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`).

Installing the Tivoli Storage Manager server

To continue on and configure Tivoli Storage Manager, see Chapter 3, “Taking the first steps after you install Tivoli Storage Manager,” on page 37.

Installing server language packages

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

Server language locales

Use either the default language package option or select another language package to display server messages and help.

This language package is automatically installed for the following default language option for Tivoli Storage Manager server messages and help: LANGUAGE AMENG.

For languages or locales other than the default, install the language package that your installation requires.

You can use the languages shown:

Table 17. Server languages for Windows

Language	LANGUAGE option value
Chinese, Simplified	chs
Chinese, Traditional	cht
English	ameng
French	fra
German	deu
Italian	ita
Japanese (Shift-JIS)	jpn
Korean	kor
Portuguese, Brazilian	ptb
Russian	rus
Spanish	esp
Notes: For more information about setting the LANGUAGE option, see the <i>Administrator's Reference</i> .	

Restriction: For Administration Center users, some characters might not be displayed 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.

Configuring a language package

After you configure a language package, messages and help are shown on the Tivoli Storage Manager in languages other than US English. Installation packages are provided with Tivoli Storage Manager.

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 34.

If the locale is successfully initialized, it formats the date, time, and number for the server. If the locale is not successfully initialized, the server uses the US English message files and the date, time, and number format.

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

After you install Tivoli Storage Manager Version 6.3 or later, prepare for the configuration. Using the configuration wizard is the preferred method of configuring the Tivoli Storage Manager instance.

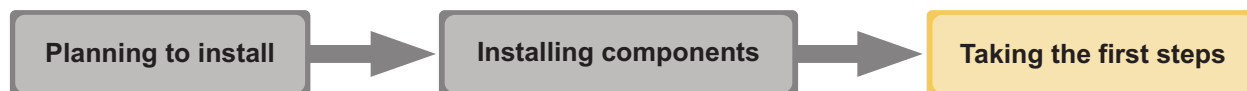


Figure 3. You are in the configuring the Tivoli Storage Manager server section

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 user ID and directories for the server instance” on page 38.
2. Configure a Tivoli Storage Manager instance. Select one of the following options:
 - Use the Tivoli Storage Manager configuration wizard, the preferred method. See “Configuring Tivoli Storage Manager using the configuration wizard” on page 40.
 - Manually configure the new Tivoli Storage Manager instance. See “Configuring the server instance manually” on page 42. 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 43.
 - b. Create a new server options file by copying the sample file to set up communications between the server and clients. See “Configuring server and client communications” on page 44.
 - c. Issue the DSMSEV FORMAT command to format the database. See “Formatting the database and log” on page 48.
 - d. Create a Windows service. See “Creating a Windows service for the server instance” on page 48.
 - e. Configure your system for database backup. See “Preparing the database manager for backup” on page 41.
3. Configure options to control when database reorganization runs. See “Configuring server options for server database maintenance” on page 51.
4. Start the Tivoli Storage Manager server instance if it is not already started. See “Starting the server instance on Windows systems” on page 52.
5. Register your license. See “Registering licenses” on page 53.
6. Prepare your system for database backups. See “Preparing the system for backups” on page 53.
7. Monitor the server. See “Monitoring the server” on page 54.

Creating the user ID and directories for the server instance

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

Review the information about planning space for the server before completing this task. See “Worksheets for planning details for the Tivoli Storage Manager server” on page 8.

1. 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 account is the one 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 30 characters or less, and cannot start with *ibm*, *sql*, *sys*, or a numeral. The user ID and group name cannot be *user*, *admin*, *guest*, *public*, *local*, or any SQL reserved word.

- 1) Use the following operating system 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 operating system commands to add the new user ID to the Administrators groups:

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

- b. Log in to the system, change to the user account that you just created.
 - 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.
2. Create directories that the server requires. Ensure that you are logged in under the new user ID you just created.

Installing the Tivoli Storage Manager server

Create empty directories for each of the items shown in the following table. The database, archive log and active log should reside on different physical volumes.

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>	

When a server is initially created, with the **DSMSERV FORMAT** utility or with the configuration wizard, a server database and recovery log are created. In addition, files are created to hold database information that is used by the database manager.

3. If a configuration profile does not exist for the user ID, create the file. For example, create a .profile file if you are using the Korn shell (ksh).
4. Log off the new user ID.

Configuring Tivoli Storage Manager

After you have installed Tivoli Storage Manager Version 6.3 or later 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 40.
- Manually configure the new Tivoli Storage Manager instance. See “Configuring the server instance manually” on page 42. 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 43.
 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 44.

Installing the Tivoli Storage Manager server

3. Issue the DSMSEV FORMAT command to format the database. See “Formatting the database and log” on page 48.
4. Configure your system for database backup. See “Preparing the database manager for backup” on page 41.

Configuring Tivoli Storage Manager using the configuration wizard

The wizard offers a guided approach to configuring a server. By using the graphical user interface (GUI), 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 server program.

Before beginning the configuration wizard, you must complete all preceding steps to prepare for the configuration, including installing Tivoli Storage Manager, 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 the Windows server message block (SMB) protocol enabled. 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.

Tip: You might 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 another protocol is configured to allow the wizard to run. See “Configuring Remote Execution Protocol on Windows Server 2008” on page 41 for instructions.

 - You must be able to log on to the system using a protocol that is enabled on the system, by 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:

Either click **Start > All Programs > Tivoli Storage Manager > Configuration Wizard**. Or, 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.

Configuring Remote Execution Protocol on Windows Server 2008

Configure your Remote Execution Protocol (REXEC) settings by using these procedures.

You must configure the User Account Control feature before running the wizard.

1. Enable Sharing for Guest or Everyone accounts.
2. Disable password-protected sharing:
 - a. Click **Start > Control Panel > Network and Sharing Center > Sharing and Discovery**.
 - b. Click the down arrow to display the **password-protected sharing** list.
 - c. Click **Turn off password protected sharing**.
 - d. Click **Apply** and exit.
3. If the system is running on Windows Server 2008, complete the following steps to disable User Account Control:
 - a. Ensure that the Remote Registry in Windows Services is started, and ports 445, 137, and 139 are unblocked in the firewall.
 - b. Configure both the framework server and the targets as members of a Windows domain. Use a user account in that domain, or in a trusted domain, when you connect to the target.
 - c. Connect to the target workstation by enabling and using the built-in administrator account. To enable the built-in administrator account, click **Control Panel > Administrative Tools > Local Security Policy > Security Settings > Local Policies > Security Options**. Double-click the **Accounts: Administrator account status** section. Select **Enable** and click **OK**.
 - d. Click **Control Panel > Administrative Tools > Local Security Policy > Security Settings > Local Policies > Security Options**. Double-click the **User Account Control: Run all administrators in Admin Approval Mode** section. Select **Disable** and click **OK**.

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 configuration wizard to create a Tivoli Storage Manager server instance, you do not have 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 recovered, security can be compromised. For this reason, sensitive data must 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.

Installing the Tivoli Storage Manager server

1. Create a file called `tsmdbmgr.env` in the `d:\tsmsserver1` directory with the following contents:
`DSMI_CONFIG=d:\tsmsserver1\tsmdbmgr.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 is to go 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\tsmdbmgr.env`

3. Create a file called `tsmdbmgr.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
```

Tip: Ensure that you enter the same `tcpport` as the server is using. This is specified in the `dsmserv.opt` file.

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 6.3 or later, 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 server key database file, `cert.kdb`, and the `.arm` files (used by clients and other servers to import the Secure Sockets Layer certificates of the server)
 - 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 6.3 or later server (the instance user ID).

```
db2icrt -s ese -u user_account instance_name
```

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

```
db2icrt -s ese -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:

Installing the Tivoli Storage Manager server

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

For example, the instance directory is d:\tsm\server1 and 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*.

You can specify one or more of the following communication methods:

- TCP/IP Version 4 or Version 6
- Named Pipes
- Shared memory
- Simple network management protocol (SNMP) DPI
- Secure Sockets Layer (SSL)

Note: You can authenticate passwords with the LDAP directory server, or authenticate passwords with the Tivoli Storage Manager server. Passwords that are authenticated with the LDAP directory server can provide enhanced system security. For details, see the managing passwords and logon procedures section in the *Administrator's Guide*.

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.

```
commmethod      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:

```
commmethod      namedpipe
namedpipename    \\.\pipe\adsmapipe
```

Installing the Tivoli Storage Manager server

COMMETHOD can be used multiple times in the IBM Tivoli Storage Manager server options file, with a different value each time. For example, the following example is possible:

```
commethod tcpip  
commethod namedpipe
```

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.

COMMETHOD can be used multiple times in the IBM Tivoli Storage Manager server options file, with a different value each time. For example, the following example is possible:

```
commethod tcpip  
commethod sharedmem
```

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. Agents are available on AIX. 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
```

Setting Secure Sockets Layer options:

You can add more protection for your data and passwords by using Secure Sockets Layer (SSL).

SSL is the standard technology for creating encrypted sessions between servers and clients. SSL provides a secure channel for servers and clients to communicate over open communication paths. With SSL, the identity of the server is verified through the use of digital certificates.

To ensure better system performance, use SSL only for sessions when it is needed. Consider adding additional processor resources on the Tivoli Storage Manager server to manage the increased requirements.

Refer to setting up Transport Layer Security (TLS) in the *Administrator's Guide*.

Formatting the database and log

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

After you set up server communications, you are ready to initialize the database. Ensure that you log in by using the instance user ID. 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 9 for more details.

For optimal performance and to facilitate I/O, specify at least two equally sized containers or Logical Unit Numbers (LUNs) for the database. See *Optimizing Performance* for more information about the configuration of directories for the database. In addition, each active log and archive log should have its own container or LUN.

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 directory and use the **DSMSERV FORMAT** utility, with the **-k** parameter, from that directory. That directory becomes the location of the server. The registry tracks the installed servers.

Setting the server code page

Set the DB2CODEPAGE system environment variable to 819 for each server instance. Before you issue the **DSMSERV LOADFORMAT** command, log on to the system as the server instance owner and issue this command:

```
db2set -i instance_name DB2CODEPAGE=819
```

For example:

```
db2set -i server1 DB2CODEPAGE=819
```

Initializing a server instance

Use the **DSMSERV FORMAT** utility to initialize a server instance. For example, issue the following command:

```
dsmserv -k server2 format dbdir=d:\tsm\db001 activelogsiz=8192  
activelogdirectory=e:\tsm\activelog archlogdirectory=f:\tsm\archlog  
archfailoverlogdirectory=g:\tsm\archfaillog mirrorlogdirectory=h:\tsm\mirrorlog
```

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

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.

Important: The standard way to start the server is by using the instance user ID. By using the instance user ID, you simplify the setup process and avoid potential issues. However, in some cases, it might be necessary to use another user ID to start the server. For example, you might want to use the administrator user ID to ensure that the server can access specific devices. To allow a user other than the instance user ID to start the server, the user ID must have administrative authority on the system and must be a member of the DB2ADMNS and DB2USERS groups.

Installing the Tivoli Storage Manager server

The user ID that is used to start the server must have appropriate authorizations; otherwise, the server does not function as expected.

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. The `install.exe` file in this directory installs the Tivoli Storage Manager server as a Windows service.
2. Install the Windows service by using the same server name and user ID that you used to start the Tivoli Storage Manager server. Issue the following command:

```
install "TSM server_instance_name"  
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"  
instance_owner instance_owner_password
```

where:

- *TSM server_instance_name* is the name of the service that is being installed.
- *server_instance_name* is the instance name that was specified when you issued the **db2icrt** command.
- *instance_owner* is the instance owner account; this account will own the service.
- *instance_owner_password* is the password for the instance owner account.

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

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

Example. To install the Windows service for the server1 server instance, enter the following command on one line. The example uses rudy as the instance owner and s21ret as the instance owner account.

```
C:\>cd "\Program Files\Tivoli\TSM\console"  
C:\Program Files\Tivoli\TSM\console>install "TSM server1"  
"C:\Program Files\Tivoli\TSM\server\dsmsvc.exe"  
rudy s21ret
```

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 configuration wizard to create a Tivoli Storage Manager server instance, you do not have 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 recovered, security can be compromised. For this reason, sensitive data must always be encrypted by the Tivoli Storage Manager client or the storage device, unless the storage media is physically secured.

Installing the Tivoli Storage Manager server

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 tsmbmgr.env in the d:\tsmsserver1 directory with the following contents:

```
DSMI_CONFIG=d:\tsmsserver1\tsmbmgr.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 is to go 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\tsmbmgr.env
```
 3. Create a file called tsmbmgr.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
```
- Tip:** Ensure that you enter the same tcpport as the server is using. This is specified in the dsmserv.opt file.
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\tsmbmgr.opt"
```


Configuring server options for server database maintenance

To help avoid problems with database growth and server performance, the server automatically monitors its database tables and reorganizes them when needed. Before starting the server for production use, set server options to control when reorganization runs. If you plan to use deduplication, ensure that the option to run index reorganization is enabled.

Table and index reorganization requires significant processor resources, active log space, and archive log space. Because database backup takes precedence over reorganization, select the time and duration for reorganization to ensure that the processes do not overlap and reorganization can complete. For more information about scheduling reorganization, see *Administrator's Guide*.

If you update these server options while the server is running, you must stop and restart the server before the updated values take effect.

1. Modify the server options.
 - To activate an option, remove the asterisk at the beginning of the line.
 - Begin entering an option on any line.
 - Enter only one option per line. The entire option with its value must be on one line.
 - If you have multiple entries for an option in the file, the server uses the last entry.
 - To view available server options, see the sample file, `dsmserv.opt.smp`, in the `/opt/tivoli/tsm/server/bin` directory.

You can modify server options by using the options file editor included in the IBM Tivoli Storage Manager Console. The options file editor is the preferred way to change server options, but you can also use a text editor.

2. If you plan to use deduplication, enable the **ALLOWREORGINDEX** server option. Add the following option and value to the server options file:


```
allowreorgindex yes
```
3. Set two server options that control when reorganization starts and how long it runs. Select a time and duration so that reorganization runs when you expect that the server is least busy. These server options control both table and index reorganization processes.
 - a. Set the time for reorganization to start by using the **REORGBEGINTIME** server option. Specify the time by using the 24-hour system. For example, to set the start time for reorganization as 8:30 p.m., specify the following option and value in the server options file:


```
reorgbegintime 20:30
```
 - b. Set the interval during which the server can start reorganization. For example, to specify that the server can start reorganization for four hours after the time set by the **REORGBEGINTIME** server option, specify the following option and value in the server options file:


```
reorgduration 4
```
4. If the server was running while you updated the server options file, stop and restart the server.

Starting the server instance on Windows systems

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

Remember: Log in by using the server instance ID. 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. If you do not have authority to the server DB2 database, you cannot start that instance of the server.

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

Starting the server by using Windows services

You can use the Windows Services Control Manager to start the server.

To start the server by 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 the service in the list, right-click it, and then click **Properties**.
3. On the **General** tab, select the service startup type: automatic or manual.
4. On the **Log On** tab, specify the account under which the service logs on. The account must own the server DB2 instance and have permissions to start the service.
5. In the **Services** section of the page, select your service in the list, right-click it, and then click **Start**.

To see the start and stop completion messages that are logged in the Windows Application log, 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.

Example: Register a license

Register the base Tivoli Storage Manager license.

```
register license file=tsmbasic.lic
```

Preparing the system for 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 dbback
```

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

You can 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 is stored separately from the files used by another server instance on the same system. Use the steps in “Creating the server instance” on page 43 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 V6.2 or V6.3 or later and have multiple servers on your system, you must run the upgrade wizard only once. The upgrade wizard collects the database and variables information for all of your original server instances.

If you are upgrading from Tivoli Storage Manager Version 6.1 to V6.3 or later and have multiple servers on your system, 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.

A typical Tivoli Storage Manager installation involves one server instance on the Tivoli Storage Manager server computer. You might want to install a second instance if you are configuring in a clustered environment. You might also want to run more than one server on a large computer if you have multiple tape libraries or a disk-only configuration. After you install and configure the first Tivoli Storage Manager server, use the Server Initialization wizard to create additional Tivoli Storage Manager server instances on the same computer.

For information about the Server Initialization wizard, see the *Tivoli Storage Manager Administrator's Guide*.

By using the Server Initialization wizard, you can install up to four Tivoli Storage Manager server instances on a single system or cluster.

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.

Installing the Tivoli Storage Manager server

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.

For details about monitoring, see the *Administrator's Guide*.

Monitoring space utilization for the database and recovery logs

To determine the amount of used and available active log space, you issue the **QUERY LOG** command. To monitor space utilization in the database and recovery logs, you can also check the activity log for messages.

Active log

If the amount of available active log space is too low, the following messages are displayed in the activity log:

ANR4531I: IC_AUTOBACKUP_LOG_USED_SINCE_LAST_BACKUP_TRIGGER

This message is displayed when the active log space exceeds the maximum specified size. The Tivoli Storage Manager server starts a full database backup.

To change the maximum log size, halt the server. Open the `dsmserv.opt` file, and specify a new value for the `ACTIVELOGSIZE` option. When you are finished, restart the server.

ANR0297I: IC_BACKUP_NEEDED_LOG_USED_SINCE_LAST_BACKUP

This message is displayed when the active log space exceeds the maximum specified size. You must back up the database manually.

To change the maximum log size, halt the server. Open the `dsmserv.opt` file, and specify a new value for the `ACTIVELOGSIZE` option. When you are finished, restart the server.

ANR4529I: IC_AUTOBACKUP_LOG_UTILIZATION_TRIGGER

The ratio of used active-log space to available active-log space exceeds the log utilization threshold. If at least one full database backup has occurred, the Tivoli Storage Manager server starts an incremental database backup. Otherwise, the server starts a full database backup.

ANR0295I: IC_BACKUP_NEEDED_LOG_UTILIZATION

The ratio of used active-log space to available active-log space exceeds the log utilization threshold. You must back up the database manually.

Archive log

If the amount of available archive log space is too low, the following message is displayed in the activity log:

ANR0299I: IC_BACKUP_NEEDED_ARCHLOG_USED

The ratio of used archive-log space to available archive-log space exceeds the log utilization threshold. The Tivoli Storage Manager server starts a full automatic database backup.

Database

If the amount of space available for database activities is too low, the following messages are displayed in the activity log:

ANR2992W: IC_LOG_FILE_SYSTEM_UTILIZATION_WARNING_2

The used database space exceeds the threshold for database space utilization. To increase the space for the database, use the **EXTEND DBSPACE** command, the **EXTEND DBSPACE** command, or the DSMSESV FORMAT utility with the **DBDIR** parameter.

ANR1546W: FILESYSTEM_DBPATH_LESS_1GB

The available space in the directory where the server database files are located is less than 1 GB.

When a Tivoli Storage Manager server is created with the DSMSESV FORMAT utility or with the configuration wizard, a server database and recovery log are also created. In addition, files are created to hold database information used by the database manager. The path specified in this message indicates the location of the database information used by the database manager. If space is unavailable in the path, the server can no longer function.

You must add space to the file system or make space available on the file system or disk.

Installing the Tivoli Storage Manager server

Chapter 4. Installing a Tivoli Storage Manager server fix pack

Tivoli Storage Manager maintenance updates, which are also referred to as fix packs, bring your server up to the current maintenance level.

To install a fix pack or interim fix to the server, install the server at the level on which you want to run it. You do not have to start the server installation at the base release level. For example, if you currently have V6.1.2.1 installed, you can go directly to the latest fix pack for V6.3 or later. You do not have to start with the V6.3.0 installation if a maintenance update is available.

You must have the Tivoli Storage Manager license package installed. The license package is provided with the purchase of a base release. Alternatively, you can obtain the license package when download a fix pack from the Passport Advantage website. After the fix pack or interim fix is installed, install the license for the server. To display messages and help in a language other than US English, install the language package of your choice.

For information about the estimated time required to install a fix pack, see Techdoc 7023591.

If you upgrade the server to V6.3.4 or later, and then revert the server to a level that is earlier than V6.3.4, you must restore the database to a point in time before the upgrade. During the upgrade process, complete the required steps to ensure that the database can be restored: back up the database, the volume history file, the device configuration file, and the server options file. For more information, see Chapter 6, “Reverting from Version 6.3 or later to the previous Version 6 server,” on page 91.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

Visit this website: http://www.ibm.com/support/entry/portal/Overview/Software/Tivoli/Tivoli_Storage_Manager for the following information:

- A list of the latest maintenance and download fixes. Click **Support and downloads** and apply any applicable fixes.
- Details about obtaining a base license package. Search for **Warranties and licenses**.
- Supported platforms and system requirements. Click **Server requirements**.

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

Attention: Do not alter the DB2 software that is installed with Tivoli Storage Manager installation packages and fix packs. Do not install or upgrade to a different version, release, or fix pack of DB2 software because doing so can damage the database.

Installing a Tivoli Storage Manager fix pack

1. Obtain the package file for the fix pack or interim fix that you want to install from the Tivoli Storage Manager FTP downloads site: `ftp://public.dhe.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. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, issue the following Tivoli Storage Manager administrative command:
`backup db type=dbsnapshot devclass=tapeclass`

See the *Administrator's Guide* for more details.

4. Back up the device configuration information. Issue the following Tivoli Storage Manager administrative command:
`backup devconfig filenames=file_name`

where *file_name* specifies the name of the file in which to store device configuration information.

5. Save the volume history file to another directory or rename the file. Issue the following Tivoli Storage Manager administrative command:
`backup volhistory filenames=file_name`

where *file_name* specifies the name of the file in which to store the volume history information.

6. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
7. Halt the server before installing a fix pack or interim fix. Use the **HALT** command.
8. Ensure that extra space is available in the installation directory. The installation of this fix pack might require additional temporary disk space in the installation directory of the server. The amount of additional disk space can be as much as that required for installing a new database as part of a Tivoli Storage Manager installation. The Tivoli Storage Manager installation wizard displays the amount of space that is required for installing the fix pack and the available amount. If the required amount of space is greater than the available amount, the installation stops. If the installation stops, add the required disk space to the file system and restart the installation.
9. 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, fix any errors, then restart your servers.

Installation wizard

"Installing Tivoli Storage Manager by using the installation wizard" on page 28

Command-line console wizard

“Installing Tivoli Storage Manager by using the console installation wizard” on page 29

Silent mode

“Installing Tivoli Storage Manager in silent mode” on page 30

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

`coi\plan\tmp`

Applying a fix pack to Tivoli Storage Manager V6 in a clustered environment

To install a fix pack on a Tivoli Storage Manager V6 server in a Windows clustered environment, several steps are required.

To install a fix pack or interim fix to the server, install the server at the level on which you want to run it. You do not have to start the server installation at the base release level. For example, if you currently have V6.1.2.1 installed, you can go directly to the latest fix pack for V6.3 or later. You do not have to start with the V6.3.0 installation if a maintenance update is available.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

1. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, issue the following command:
`backup db type=dbsnapshot devclass=tapeclass`

Important: If the upgrade fails, and you must revert the server to the previous level, you will need the database backup and the configuration files that you save in the next steps. By using the database backup and the configuration files, you might be able to revert the server to the previous level.

2. Back up the device configuration information. Issue the following command:
`backup devconfig filenames=file_name`

where *file_name* specifies the name of the file in which to store device configuration information.

3. Back up the volume history information. Issue the following command:
`backup volhistory filenames=file_name`

where *file_name* specifies the name of the file in which to store the volume history information.

4. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
5. Disable automatic failback.

Installing a Tivoli Storage Manager fix pack

Tip: You must disable automatic failback so that no groups automatically fail back during the installation.

- a. In the Failover Cluster Manager window, select **Services and Applications** and right-click the cluster group.
 - b. Select **Properties**.
 - c. On the **Failover** tab in the Properties window, select **Prevent failback** and click **OK**.
 - d. If multiple groups exist, repeat the preceding steps to disable automatic failback for each group.
6. Determine the first server on which to install the fix pack.
 7. Move the cluster groups from the node where the fix pack is to be installed.
 8. Stop the cluster server node. In the Component Services window, right-click **Cluster Service** and click **Stop**.
 9. Install the Tivoli Storage Manager fix pack. For details, see Installing a Tivoli Storage Manager fix pack.

Tip: Tivoli Storage Manager is still running and available on another node. If the DB2 installation attempts to access an offline instance near the end of the installation, you might receive error message SQL5005C. This message does not indicate an installation failure. You can ignore the message.

10. Take the Tivoli Storage Manager server and the DB2 resources offline:
 - a. In the Failover Cluster Manager window, select **Services and Applications** and then select the cluster group. The resources for the group are displayed. In the **Other Resources** section, **SERVER1** and the Tivoli Storage Manager server are displayed.
 - b. In the **Other Resources** section, right-click the **Tivoli Storage Manager Instance(x) Server**, where x represents the instance number. Select **Take this resource Offline**. Repeat this step for **SERVER1**.
11. Restart the cluster service on the current node. In the Component Services window, right-click **Cluster Service** and click **Start**.
12. Move the cluster groups to the current node:
 - a. In the Failover Cluster Manager window, click **Services and Applications**.
 - b. Right-click the cluster group and select **Move this service or application to another node**. The Current Owner column changes to the current node.
 - c. Optional: If multiple groups exist, move the other cluster groups to the current node by repeating steps 12a and 12b.
13. Start the DB2 resources:
 - a. In the Failover Cluster Manager window, select **Services and Applications**, and then select the cluster group.
 - b. Right-click **SERVER1** and select **Bring this service online**. Repeat this step for each **Tivoli Storage Manager Instance (x) Server**, where x represents the instance number.
14. Stop the cluster service on the second node. In the Component Services window, right-click **Cluster Service** and click **Stop**.
15. Install the Tivoli Storage Manager fix pack. Tivoli Storage Manager is now running and available on the first node. If the DB2 installation attempts to access an offline instance before the installation is completed, you might receive error message SQL5005C. This message does not indicate an installation failure. You can ignore the message.

16. Restart the cluster service on this node. In the Component Services window, right-click **Cluster Service** and click **Start**.
17. Move the cluster groups back to the servers that you want to use:
 - a. In the Failover Cluster Manager window, click **Services and Applications**.
 - b. Right-click the group that you want to move and select **Move this service or application to another node**. The Current Owner column changes to the selected node.
 - c. For any other nodes that must be moved to the owners that you want to use, repeat step 17b. This step reverts the Microsoft Cluster Server environment to its initial configuration.
18. Restart automatic failback processing:
 - a. In the Failover Cluster Manager window, right-click the cluster group.
 - b. Select **Properties**.
 - c. On the **Failover** tab of the Cluster Group Properties window, select **Allow failback**, and click **OK**.

Installing a Tivoli Storage Manager fix pack

Chapter 5. Upgrading to Tivoli Storage Manager Version 6.3 or later

You can upgrade an IBM Tivoli Storage Manager server from any version of 6.1 or 6.2 directly to Version 6.3 or later.

Table 18. Upgrade information

To upgrade from this version	To this version	See this information
V6.3 or later	V6.3 or later	Chapter 4, "Installing a Tivoli Storage Manager server fix pack," on page 59
V6.2	V6.3 or later	"Upgrading from Tivoli Storage Manager V6.2 to V6.3 or later" on page 66
V6.1	V6.3 or later	"Upgrading from Tivoli Storage Manager V6.1 to V6.3 or later" on page 71
V5.5	V6.3 or later	<i>Upgrade and Migration Guide for V5 Servers</i>

For information about upgrades in a clustered environment, see "Upgrading Tivoli Storage Manager in a clustered environment" on page 82.

If a Tivoli Storage Manager V5 server is installed, and you prefer to upgrade the server to V6 on a different operating system, see the instructions for server migration:

Table 19. Migration information

To migrate the server from this operating system	To this operating system	See this information
AIX	Linux x86_64	Section about migrating Tivoli Storage Manager V5 servers on AIX, HP-UX, or Solaris systems to V6.3.4 on Linux in the <i>Upgrade and Migration Guide for V5 Servers</i>
HP-UX	Linux x86_64	Section about migrating Tivoli Storage Manager V5 servers on AIX, HP-UX, or Solaris systems to V6.3.4 on Linux in the <i>Upgrade and Migration Guide for V5 Servers</i>
Solaris	Linux x86_64	Section about migrating Tivoli Storage Manager V5 servers on AIX, HP-UX, or Solaris systems to V6.3.4 on Linux in the <i>Upgrade and Migration Guide for V5 Servers</i>

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Table 19. Migration information (continued)

To migrate the server from this operating system	To this operating system	See this information
z/OS®	AIX	Section about migrating Tivoli Storage Manager V5 servers on z/OS systems to V6 on AIX or Linux on System z® in the <i>Upgrade and Migration Guide for V5 Servers</i>
z/OS	Linux on System z	Section about migrating Tivoli Storage Manager V5 servers on z/OS systems to V6 on AIX or Linux on System z in the <i>Upgrade and Migration Guide for V5 Servers</i>

To revert to an earlier version of Tivoli Storage Manager after an upgrade or migration, you must have a full database backup and the installation software for the original server. You must also have key configuration files:

- Volume history file
- Device configuration file
- Server options file
- dsmserv.dsk file

Restriction: 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.

Upgrading from Tivoli Storage Manager V6.2 to V6.3 or later

You can upgrade the server directly from Tivoli Storage Manager Version 6.2 to V6.3.1, V6.3.2, V6.3.3, or V6.3.4 without installing V6.3 first. You also do not need to uninstall V6.2.

To upgrade to the Tivoli Storage Manager V6.3 or later server, install the V6.3 license package. The license package is provided with the purchase of a base release. Alternatively, you can obtain the license package when you download a fix pack from Passport Advantage, an IBM license acquisition and software maintenance website, at <http://www.ibm.com/software/lotus/passportadvantage/pacustomers.html>.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

The upgrade process consists of three phases:

1. Planning the upgrade
2. Preparing the system
3. Installing the software and verifying the upgrade

To plan the upgrade, complete the following steps:

1. Optional: To review hardware and software requirements before you start the upgrade process, see the requirements for your operating system:

“System requirements for the Tivoli Storage Manager server” on page 5

For the latest updates related to system requirements, see the Tivoli Storage Manager support website at <http://www.ibm.com/support/docview.wss?uid=swg21243309>.

Tip: At a later stage in the process, after you extract the installation files, you can run the prerequisite checker to automatically verify hardware and software requirements.

2. For special instructions or specific information for your operating system, review the release notes or readme files: http://publib.boulder.ibm.com/infocenter/tsminfo/v6r3/topic/com.ibm.itsm.relnotes.doc/relnote_server630.html. Alternatively, review the readme file on the Tivoli Storage Manager installation DVD or in the directory where you extract the package.
3. If the server that you are upgrading is at a release level that is earlier than V6.2.3.000, review Technote 1452146 (<http://www.ibm.com/support/docview.wss?uid=swg21452146>). The technote describes improvements in the database reorganization process, and configuration changes that you might be required to make.
4. Select an appropriate day and time to upgrade your system to minimize the impact on production operations. Upgrading the server from V6.2 to V6.3 or later takes approximately 20 - 50 minutes. Your environment might produce different results from these lab results. The time that is required to update the system depends on the database size and many other factors. When you start the upgrade process, clients cannot connect to the server until the new software is installed and any required licenses are registered again.

To prepare the system for the upgrade, complete the following steps:

1. Log on to the system where you are planning to upgrade the Tivoli Storage Manager server.
Use the administrative user ID that was used to install the Tivoli Storage Manager server.
2. Back up the Tivoli Storage Manager database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, you can create a backup by issuing the Tivoli Storage Manager administrative command:
`backup db type=dbsnapshot devclass=tapeclass`

For more information about this command and other Tivoli Storage Manager administrative commands, see the *Administrator's Reference*.

3. Back up the device configuration information by issuing the Tivoli Storage Manager administrative command:
`backup devconfig filenames=file_name`
where *file_name* specifies the name of the file in which to store device configuration information.
4. Back up the volume history file to another directory or rename the file. Issue the Tivoli Storage Manager administrative command:
`backup volhistory filenames=file_name`

Upgrading the Tivoli Storage Manager server

where *file_name* specifies the name of the file in which to store the volume history information.

Important: By taking this step, you ensure that the file is not overwritten during the upgrade process. If you decide to restore the database, this file is required.

5. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
6. Back up the deployment engine by issuing the following system commands:

```
cd "C:\Program Files\IBM\Common\acsi"
setenv.cmd
cd "C:\Program Files\IBM\Common\acsi\bin"
de_backupdb.cmd
```
7. For each existing server instance, gather information about the corresponding DB2 instance. Note the default database path, actual database path, database name, database alias, and any DB2 variables that are configured for the instance. Keep the record for future reference.
 - a. Open the DB2 command window by issuing the following system command:

```
db2cmd
```

Tip: To change the instance, issue the following system command:

```
set DB2INSTANCE=instance
```
 - b. Obtain a list of DB2 instances by issuing the following system command:

```
db2ilist
```
 - c. Obtain the default database path for the DB2 instance by issuing the following system command:

```
db2 get dbm cfg | findstr DFTDBPATH
```
 - d. Obtain information about the DB2 instance databases by issuing the following system command:

```
db2 list database directory
```
 - e. Obtain the DB2 instance variables by issuing the following system command:

```
db2set -all
```
8. Prevent activity on the server by disabling new sessions. Issue the following Tivoli Storage Manager administrative commands:

```
disable sessions client
disable sessions server
```
9. Prevent administrative activity from any user ID other than the administrator ID that is being used for the upgrade preparation tasks. Lock out other administrator IDs, if necessary, by using the Tivoli Storage Manager administrative command:

```
lock admin administrator_name
```
10. Verify whether any sessions exist, and notify the users that the server will be stopped. To check for existing sessions, issue the following Tivoli Storage Manager administrative command:

```
query session
```
11. Cancel sessions that are running by issuing the following Tivoli Storage Manager administrative command:

```
cancel session all
```
12. Halt the server by issuing the following Tivoli Storage Manager administrative command:

halt

13. In the server instance directory of your installation, delete or rename the NODELOCK file. The NODELOCK file contains the previous licensing information for your installation. This licensing information is replaced when the upgrade is complete.

To install the software and verify that the upgrade was successful, complete the following steps:

1. If you are installing the products by using the Tivoli Storage Manager DVD, insert the DVD into a DVD drive.
Use Windows Explorer to go to the DVD drive and double-click the DVD.
2. If you downloaded the program from Passport Advantage as an executable file, verify that you have enough space to store the installation files when you extract them from the product package. For space requirements, see the download document for your product:

- Tivoli Storage Manager: <http://www.ibm.com/support/docview.wss?uid=swg24030522>
- Tivoli Storage Manager Extended Edition: <http://www.ibm.com/support/docview.wss?uid=swg24030528>
- System Storage Archive Manager: <http://www.ibm.com/support/docview.wss?uid=swg24030531>

3. If you are installing the program from Passport Advantage, ensure that the executable file for the installation package is in the directory where you want the installation package to be. The directory for the installation package must not contain previously extracted files, or any other files.
4. If you downloaded the program from Passport Advantage, navigate to the directory where you placed the executable file. To extract the installation files into that directory, double-click the executable file. Alternatively, enter the following system command on the command line:

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

where *6.x.x.x* indicates the version number and *platform* denotes the operating system that Tivoli Storage Manager is to be installed on.

5. To ensure that your system meets all requirements, locate the following file and run it:

`prereqcheck.exe`

For details, see “Running the installation prerequisite checker” on page 7.

6. Install the Tivoli Storage Manager software by using one of the following methods:

Installation wizard

The installation wizard guides you through the process with a graphical user interface.

For instructions, see “Upgrading Tivoli Storage Manager by using the installation wizard” on page 76

Console installation wizard

The console installation wizard guides you through the process with a text-based interface. You provide input by issuing commands. This option is useful if you are installing Tivoli Storage Manager from a system that does not support a graphical user interface.

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For instructions, see “Upgrading Tivoli Storage Manager by using the console installation wizard” on page 77

Silent mode

You start the process by specifying the values of variables, and the installation runs on its own. You are freed from the tasks of monitoring the installation and providing input during the process.

For instructions, see “Upgrading Tivoli Storage Manager in silent mode” on page 78

Tip: If you have multiple server instances on your system, run the installation wizard only once. The installation wizard upgrades all server instances. For more information about running multiple servers, see “Running multiple server instances on a single system” on page 54.

7. Correct any errors that are detected during the installation process. Errors are listed in the summary page of the wizard.

You can also review the `log.txt` and `logs.zip` files in the installation directory.

8. Verify that the upgrade was successful:

- a. Start the server instance. To start the server from the `C:\Program Files\Tivoli\TSM server` directory, issue the following Tivoli Storage Manager administrative command:

```
dsmserve -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.

Restriction: If you plan to run the server as a service under the Local System account, the Local System account must be explicitly granted access to the Tivoli Storage Manager database. For more information, see the topic about starting the server as a service in the *Administrator's Guide*.

- b. Monitor the messages that the server issues as it starts. Watch for error and warning messages, and resolve any issues.
- c. Verify that you can connect to the server by using the administrative client. To start an administrative client session, issue the following Tivoli Storage Manager administrative command:

```
dsmadmc
```

- d. Run **QUERY** commands to obtain information about the upgraded system. For example, to obtain consolidated information about the system, issue the following Tivoli Storage Manager administrative command:

```
query system
```

To obtain information about the database, issue the following Tivoli Storage Manager administrative command:

```
query db format=detailed
```

9. Register the licenses for the Tivoli Storage Manager server components that are installed on your system by issuing the following Tivoli Storage Manager administrative command:

```
register license file=*.lic
```

Restriction: You cannot register licenses for IBM Tivoli Storage Manager for Mail, IBM Tivoli Storage Manager for Databases, IBM Tivoli Storage Manager for Enterprise Resource Planning, and IBM Tivoli Storage Manager for Space Management.

10. Back up the deployment engine again by issuing the following system commands:

```
cd "C:\Program Files\IBM\Common\acsi"  
setenv.cmd  
cd "C:\Program Files\IBM\Common\acsi\bin"  
de_backupdb.cmd
```

After you upgrade the server to V6.3.3 or later, you can authenticate passwords with the LDAP directory server, or authenticate passwords with the Tivoli Storage Manager server. Passwords that are authenticated with the LDAP directory server can provide enhanced system security. For details, see the section about managing passwords and logon procedures in the *Administrator's Guide*.

Upgrading from Tivoli Storage Manager V6.1 to V6.3 or later

You can upgrade your system directly from Tivoli Storage Manager V6.1 to V6.3.1, V6.3.2, V6.3.3, or V6.3.4 without installing V6.3 first. You also do not need to uninstall V6.1.

To upgrade to the Tivoli Storage Manager V6.3 or later server, install the V6.3 license package. The license package is provided with the purchase of a base release. Alternatively, you can obtain the license package when you download a fix pack from Passport Advantage, an IBM license acquisition and software maintenance website, at <http://www.ibm.com/software/lotus/passportadvantage/pacustomers.html>.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

The upgrade process consists of three phases:

1. Planning the upgrade
2. Preparing the system
3. Installing the software and verifying the upgrade

To plan the upgrade, complete the following steps:

1. Optional: To review hardware and software requirements before you start the upgrade process, see the requirements for your operating system:
"System requirements for the Tivoli Storage Manager server" on page 5
For the latest updates related to system requirements, see the Tivoli Storage Manager support website at <http://www.ibm.com/support/docview.wss?uid=swg21243309>.

Tip: At a later stage in the process, after you extract the installation files, you can run the prerequisite checker to automatically verify hardware and software requirements.

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2. For special instructions or specific information for your operating system, review the release notes: http://publib.boulder.ibm.com/infocenter/tsminfo/v6r3/topic/com.ibm.itsm.relnotes.doc/relnote_server630.html. Alternatively, review the readme file on the Tivoli Storage Manager installation DVD or in the directory where you extract the package.
3. If the server that you are upgrading is at a release level earlier than V6.1.5.10, review Technote 1452146 (<http://www.ibm.com/support/docview.wss?uid=swg21452146>). The technote describes improvements in the database reorganization process, and configuration changes that you might be required to make.
4. To minimize the impact on production operations, select an appropriate day and time to upgrade your system. Upgrading the server from V6.1 to V6.3 or later takes approximately 20 - 50 minutes. Your environment might produce different results than these lab results. The time that is required to update the system depends on the database size and many other factors. When you start the upgrade process, clients cannot connect to the server until the new software is installed and any required licenses are registered again.

To prepare the system for the upgrade, complete the following steps:

1. Log on to the system where you are planning to upgrade the Tivoli Storage Manager server.
Use the administrative user ID that was used to install the Tivoli Storage Manager server.
2. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, you can create a backup by issuing the Tivoli Storage Manager administrative command:

```
backup db type=dbsnapshot devclass=tapeclass
```

For more information about this command and other Tivoli Storage Manager administrative commands, see the *Administrator's Reference*.

3. Back up the device configuration information by issuing the following Tivoli Storage Manager administrative command:

```
backup devconfig filenames=file_name
```

where *file_name* specifies the name of the file in which to store device configuration information.

4. Back up the volume history file to another directory or rename the file. Issue the following Tivoli Storage Manager administrative command:

```
backup volhistory filenames=file_name
```

where *file_name* specifies the name of the file in which to store the volume history information.

Important: By taking this step, you ensure that the file is not overwritten during the upgrade process. If you decide to restore the database, this file is required.

5. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
6. Back up the deployment engine by issuing the following system commands:

```
cd "C:\Program Files\IBM\Common\acsi"  
setenv.cmd  
cd "C:\Program Files\IBM\Common\acsi\bin"  
de_backupdb.cmd
```

7. Prevent activity on the server by disabling new sessions. Issue the following Tivoli Storage Manager administrative commands:

```
disable sessions client
disable sessions server
```
8. Prevent administrative activity from any user ID other than the administrator ID that is being used to prepare the upgrade. Lock out other administrator IDs, if necessary, by using the Tivoli Storage Manager administrative command:

```
lock admin administrator_name
```
9. Verify whether any sessions exist, and notify the users that the server will be stopped. To check for existing sessions, issue the following Tivoli Storage Manager administrative command:

```
query session
```
10. Cancel sessions that are running by issuing the following Tivoli Storage Manager administrative command:

```
cancel session all
```
11. Halt the server by issuing the following Tivoli Storage Manager administrative command:

```
halt
```
12. In the server instance directory of your installation, delete or rename the NODELOCK file. The NODELOCK file contains the previous licensing information for your installation. This licensing information is replaced when the upgrade is complete.
13. For each existing server instance, gather information about the corresponding DB2 instance. Note the default database path, actual database path, database name, database alias, and any DB2 variables that are configured for the instance. Keep the record for future reference.
 - a. Open the DB2 command window by issuing the following system command:

```
db2cmd
```

Tip: To change the instance, issue the following system command:

```
set DB2INSTANCE=instance
```
 - b. Obtain a list of DB2 instances by issuing the following system command:

```
db2ilist
```
 - c. Obtain the default database path for the DB2 instance by issuing the following system command:

```
db2 get dbm cfg | findstr DFTDBPATH
```
 - d. Obtain information about the DB2 instance databases by issuing the following system command:

```
db2 list database directory
```
 - e. Obtain the DB2 instance variables by issuing the following system command:

```
db2set -all
```

To verify requirements and install the software, complete the following steps:

1. If you downloaded the program from Passport Advantage as an executable file, verify that you have enough space to store the installation files when you extract them from the product package. For space requirements, see the download document for your product:

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- Tivoli Storage Manager: <http://www.ibm.com/support/docview.wss?uid=swg24030522>
 - Tivoli Storage Manager Extended Edition: <http://www.ibm.com/support/docview.wss?uid=swg24030528>
 - System Storage Archive Manager: <http://www.ibm.com/support/docview.wss?uid=swg24030531>
2. If you are installing the program from Passport Advantage, ensure that the executable file for the installation package is in the directory where you want the installation package to be. The directory for the installation package must not contain previously extracted files, or any other files.
 3. If you downloaded the program from Passport Advantage, navigate to the directory where you placed the executable file. To extract the installation files into that directory, double-click the executable file. Alternatively, enter the following system command on the command line:
`6.x.x.x-TIV-TSMALL-platform.exe`

where *6.x.x.x* specifies the version number and *platform* specifies the architecture that Tivoli Storage Manager is to be installed on.

4. If you are installing the products by using the Tivoli Storage Manager DVD, insert the DVD into a DVD drive.
Use Windows Explorer to go to the DVD drive and double-click the DVD.
5. To ensure that your system meets all requirements, locate the following file and run it:
`prereqcheck.exe`

For details, see “Running the installation prerequisite checker” on page 7.

6. Review the installation methods:

Installation wizard

The installation wizard guides you through the process with a graphical user interface.

Console installation wizard

The console installation wizard guides you through the process with a text-based interface. You provide input by issuing commands. This option is useful if you are installing Tivoli Storage Manager from a system that does not support a graphical user interface.

Silent mode

You start the process by specifying the values of variables, and the installation runs on its own. You are freed from the tasks of monitoring the installation and providing input during the process.

7. If you plan to use the installation wizard or console installation wizard for the upgrade, 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. Also, ensure that the SSH daemon service has access rights for connecting to the system by using `localhost`.

Remote shell (rsh)

Remote Execution Protocol (REXEC)

You might need to disable User Account Control while you run the wizard. If you do not disable User Account Control, you must ensure

that one of the other protocols is configured to allow the wizard to run. For instructions, see “Configuring Remote Execution Protocol on Windows Server 2008” on page 41.

Windows server message block (SMB)

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 with a protocol that is enabled on the system by using the user ID that you created for the server instance, or another user ID. When you use the wizard, use the user ID and password to access the system.

If you cannot establish a connection by using the SSH, rsh, or REXEC protocols, manually upgrade the Tivoli Storage Manager server instance from Version 6.1. For details, see <http://www.ibm.com/support/docview.wss?uid=swg27018195>.

8. Install the Tivoli Storage Manager software by using one of the following methods:

Installation wizard

For instructions, see “Upgrading Tivoli Storage Manager by using the installation wizard” on page 76.

Console installation wizard

For instructions, see “Upgrading Tivoli Storage Manager by using the console installation wizard” on page 77.

Silent mode

For instructions, see “Upgrading Tivoli Storage Manager in silent mode” on page 78.

Tips: If you have multiple server instances on your system, run the installation wizard only once. The installation wizard upgrades all server instances. For more information about running multiple servers, see “Running multiple server instances on a single system” on page 54. After Tivoli Storage Manager is upgraded, do not configure the system again.

9. Correct any database errors that are detected during the installation process. Review the output from the **db2ckupgrade** command. The log names for each database have the following structure:

installation_directory db2ckupgrade_instance_name_db_name.log

The wizard automatically corrects some errors in the database during the upgrade to V6.3 or later and DB2 V9.7. You might need to correct other errors manually. For more information about database errors, see the information about DB2 log files in the *Problem Determination Guide*.

10. Correct any other errors that were detected during the installation process. Errors are listed in the summary page of the wizard.

You can also review the log.txt and logs.zip files in the installation directory.

11. Verify that the upgrade was successful:

- a. Start the server instance. To start the server from the C:\Program Files\Tivoli\TSM server directory, issue the following Tivoli Storage Manager administrative command:

```
dsmserv -k server_instance
```

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

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Restriction: If you plan to run the server as a service under the Local System account, the Local System account must be explicitly granted access to the Tivoli Storage Manager database. For more information, see the topic about starting the server as a service in the *Administrator's Guide*.

- b. Monitor the messages that the server issues as it starts. Watch for error and warning messages, and resolve any issues.
- c. Verify that you can connect to the server by using the administrative client. To start an administrative client session, issue the following Tivoli Storage Manager administrative command:

```
dsmadm
```

- d. Run **QUERY** commands to obtain information about the upgraded system. For example, to obtain consolidated information about the system, issue the following Tivoli Storage Manager administrative command:

```
query system
```

To obtain information about the database, issue the following Tivoli Storage Manager administrative command:

```
query db format=detailed
```

12. Register the licenses for the Tivoli Storage Manager server components that are installed on your system by issuing the following Tivoli Storage Manager administrative command:

```
register license file=*.lic
```

Restriction: You cannot register licenses for IBM Tivoli Storage Manager for Mail, IBM Tivoli Storage Manager for Databases, IBM Tivoli Storage Manager for Enterprise Resource Planning, and IBM Tivoli Storage Manager for Space Management.

13. Back up the deployment engine again by issuing the following system commands:

```
cd "C:\Program Files\IBM\Common\acsi"  
setenv.cmd  
cd "C:\Program Files\IBM\Common\acsi\bin"  
de_backupdb.cmd
```

After you upgrade the server to V6.3.3 or later, you can authenticate passwords with the LDAP directory server, or authenticate passwords with the Tivoli Storage Manager server. Passwords that are authenticated with the LDAP directory server can provide enhanced system security. For details, see the section about managing passwords and logon procedures in the *Administrator's Guide*.

Upgrading Tivoli Storage Manager by using the installation wizard

Using the installation wizard is one method of upgrading Tivoli Storage Manager from Version 6.

See Chapter 5, "Upgrading to Tivoli Storage Manager Version 6.3 or later," on page 65 for an overview of the upgrade steps, before starting the upgrade.

To upgrade Tivoli Storage Manager from Version 6 by using the installation wizard, complete the following steps:

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

```
install.exe
```

Or, in the directory where the installation files were extracted, double-click the `install.exe` file.

To start the wizard and save your responses to later use for a silent installation, enter the following command and specify the `-r` option.

```
install.exe -r C:\path_name\response.rsp
```

where *path_name* is the full directory path to where you want the response file to be created. If you do not specify a fully qualified name, the response file is placed in a temporary directory.

2. Select the language for your installation and follow the wizard, selecting **Next** to step through the wizard.

Select the product that you are entitled to use and a license agreement is displayed. You can select only one product on the page. If you select Tivoli Storage Manager, Tivoli Storage Manager Extended Edition, or System Storage Archive Manager, you are asked if you will be using LAN-free or library sharing. If you select **YES**, you must accept the Tivoli Storage Manager for Storage Area Networks license agreement. This is in addition to the license for the product that you chose on the previous page.

Select the components that you want to install. Components include the server, languages, license, device driver, and storage agent. There is no default, so you must make a selection. If you previously installed a server, ensure that you select the same directory when you install a language package, 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.

The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and IBM Global Security Kit (GSKit) Version 8 are automatically installed when you select the server component.

At the end of the upgrade, a summary is provided. If errors occurred during the upgrade, another summary page lists the errors and directs you to an error log file. 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 by using the console installation wizard

Using the console installation wizard is one method of upgrading Tivoli Storage Manager from Version 6.

See Chapter 5, “Upgrading to Tivoli Storage Manager Version 6.3 or later,” on page 65 for an overview of the upgrade steps, before starting the upgrade.

To upgrade the Tivoli Storage Manager server from Version 6 by 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:\path_name\response.rsp
```

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where *path_name* is the full directory path to where you want the response file to be created. If you do not specify a fully qualified name, the response file is placed in a temporary directory.

2. Select the language for your installation and follow the wizard, selecting **Next** to step through the wizard.

Select the product that you are entitled to use and a license agreement is displayed. You can select only one product on the page. If you select Tivoli Storage Manager, Tivoli Storage Manager Extended Edition, or System Storage Archive Manager, you are asked if you will be using LAN-free or library sharing. If you select **YES**, you must accept the Tivoli Storage Manager for Storage Area Networks license agreement. This is in addition to the license for the product that you chose on the previous page.

Select the components that you want to install. Components include the server, languages, license, device driver, and storage agent. There is no default, so you must make a selection. If you previously installed a server, ensure that you select the same directory when you install a language package, 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.

The Tivoli Storage Manager client application programming interface (API), DB2 Version 9.7, and IBM Global Security Kit (GSKit) Version 8 are automatically installed when you select the server component.

At the end of the upgrade, a summary is provided. If errors occurred during the upgrade, another summary page lists the errors and directs you to an error log file. 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.

See Chapter 5, “Upgrading to Tivoli Storage Manager Version 6.3 or later,” on page 65 for an overview of the upgrade steps, before starting the upgrade.

Pass the variables in Table 20 into this file to define the silent upgrade:

`install.exe`

Table 20. Variables for the silent upgrade

Variable	Description
<ul style="list-style-type: none">• <code>-DIBM_TSM_LICENSE_ACCEPTED=true</code>• <code>-DIBM_TSMEE_LICENSE_ACCEPTED=true</code>• <code>-DIBM_SSAM_LICENSE_ACCEPTED=true</code>• <code>-DIBM_TSMSAN_LICENSE_ACCEPTED=true</code> (required)	<p>Specify one or two variables or the installation stops. It also stops if you specify more than two variables. The wizard installs the license agreement for the Tivoli Storage Manager product that is selected.</p> <p>Tip: If two products are specified, the wizard checks that one of them is the Tivoli Storage Manager for Storage Area Networks license:</p> <p><code>IBM_TSMSAN_LICENSE_ACCEPTED=true</code>.</p> <p>If one variable is not, the wizard stops.</p>

Table 20. Variables for the silent upgrade (continued)

Variable	Description
<p>For command line: -DINSTANCE_CRED="<i>instance1 userid1 password1, instance2 userid2 password2</i>" (required)</p> <p>For response file: INSTANCE_CRED=<i>instance1 userid1 password1, instance2 userid2 password2</i> (required)</p>	<p>Enter the instance credentials used by the upgrade wizard to redefine the database instance in an upgrade from V6.1.</p> <p>Use quotation marks around the credentials when you pass them into the command line. Specify multiple instances by separating them with a comma.</p> <pre>install.exe -i silent -DIBM_TSM_LICENSE_ACCEPTED=true -DINSTALL_SERVER=1 -DINSTALL_LICENSE=1 -DINSTALL_DEVICES=1 -DINSTANCE_CRED= "<i>instance1 userid1 password1, instance2 userid2 password2</i>"</pre> <p>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 the server instances by looking for DB2-DB2TSM1 names, for example: DB2-DB2TSM1-SERVER1. The user ID is the name that is listed in the Log On As section.</p> <p>Tip: An instance cannot be in both the INSTANCE_CRED and the INSTANCE_OMIT parameters. All of the instances that exist when an installation package is upgraded must be listed in either the INSTANCE_CRED or the INSTANCE_OMIT parameters. Or, the silent upgrade fails.</p>
<p>For command line:- DINSTANCE_OMIT="<i>instance3, instance4</i>" (optional)</p> <p>For response file: INSTANCE_OMIT=<i>instance3, instance4</i> (optional)</p>	<p>Enter any instances that will not be recreated as part of the upgrade from V6.1. Use this variable if you have an instance that exists but is not used. Use it if you removed the instance user ID, forgot the password, or otherwise do not want to create the instance as part of an upgrade.</p> <p>Use quotation marks around the credentials when you pass them into the command line. Specify multiple instances by separating them with a comma.</p> <p>Tip: An instance cannot be in both the INSTANCE_CRED and the INSTANCE_OMIT parameters. All of the instances that exist when an installation package is upgraded must be listed in either the INSTANCE_CRED or the INSTANCE_OMIT parameters. Or, the silent upgrade fails.</p>
-DINSTALL_DEVICES=1 (optional)	Upgrade the Tivoli Storage Manager device driver.

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Table 20. Variables for the silent upgrade (continued)

Variable	Description
-DINSTALL_LICENSE=1 (required for base packages)	Upgrade the Tivoli Storage Manager server license component. This variable should be specified only if the package being upgraded includes Tivoli Storage Manager server license files or the installation might fail. This option is typically required only for a first-time upgrade of the base release package. This option should not be used when installing most fix packs and interim fix packages because they do not include the server licenses.
-DINSTALL_SERVER=1 (optional)	Upgrade the Tivoli Storage Manager server component.
-DINSTALL_STAGENT=1 (optional)	Upgrade the Tivoli Storage Manager storage agent. Restriction: A server and a storage agent cannot be installed on the same workstation.
-DINSTALL_language_package=1 (optional)	Upgrade a specific language pack. You can install the following server language-packages during the silent installation, using these variables: <ul style="list-style-type: none">• 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 package, use this variable: -DINSTALL_GERMAN=1

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 by using a batch script” on page 81.

- To enable a component for a silent upgrade, append it to the **install.exe** command on a single line. For example:

```
install.exe -i silent  
-DIBM_TSM_LICENSE_ACCEPTED=true  
-DINSTALL_SERVER=1 -DINSTALL_LICENSE=1  
-DINSTALL_ENGLISHUTF8=1
```
- Alternatively, the component variables can be placed into a response file. The path to this response file can then be passed into the **install.exe** command. To create this file, use the same variables that are in Table 20 on page 78.

Remove the -D and separate the options on individual lines. Do not use quotation marks. For example:

```
INSTANCE_CRED=server1 server1 server1
INSTANCE_OMIT=server2
IBM_product_LICENSE_ACCEPTED=true
INSTALL_SERVER=1
INSTALL_SPANISH=1
```

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

```
install.exe -i silent -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. You might see a difference between response files, depending on which installation mode you used (GUI or console).

Fix any errors before continuing. For more information, review the following log:

The upgrade directory; look for the file log.txt.

Upgrading silently by using a batch script

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

To create and run a batch script, complete the following steps:

1. Create a file and name it install.bat.

Restriction: The file name must end with .bat, not .bat.txt.

2. Choose an installation option (with or without a response file). Enter the command into the install.bat file and save the file. For example:

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

3. To run the batch file, open a command prompt window. Issue this command:

```
install.bat
```

4. After the installation is completed, issue the following command to retrieve the return code:

```
echo %ERRORLEVEL%
```

Fix any 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).

Configuring Remote Execution Protocol on Windows Server 2008

Configure your Remote Execution Protocol (REXEC) settings by using these procedures.

You must configure the User Account Control feature before running the wizard.

1. Enable Sharing for Guest or Everyone accounts.
2. Disable password-protected sharing:
 - a. Click **Start > Control Panel > Network and Sharing Center > Sharing and Discovery**.
 - b. Click the down arrow to display the **password-protected sharing** list.
 - c. Click **Turn off password protected sharing**.
 - d. Click **Apply** and exit.

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3. If the system is running on Windows Server 2008, complete the following steps to disable User Account Control:
 - a. Ensure that the Remote Registry in Windows Services is started, and ports 445, 137, and 139 are unblocked in the firewall.
 - b. Configure both the framework server and the targets as members of a Windows domain. Use a user account in that domain, or in a trusted domain, when you connect to the target.
 - c. Connect to the target workstation by enabling and using the built-in administrator account. To enable the built-in administrator account, click **Control Panel > Administrative Tools > Local Security Policy > Security Settings > Local Policies > Security Options**. Double-click the **Accounts: Administrator account status** section. Select **Enable** and click **OK**.
 - d. Click **Control Panel > Administrative Tools > Local Security Policy > Security Settings > Local Policies > Security Options**. Double-click the **User Account Control: Run all administrators in Admin Approval Mode** section. Select **Disable** and click **OK**.

Upgrading Tivoli Storage Manager in a clustered environment

To upgrade a Tivoli Storage Manager server to V6.3 or later in a clustered environment, you must complete preparation and installation tasks. The procedures vary, depending on the operating system and release.

Follow the procedure for your operating system, source release, and target release:

Table 21. Procedures for upgrading the server in a clustered environment on a Windows operating system

Source release	Target release	Procedure
V6.3 or later	V6.3 or later	"Applying a fix pack to Tivoli Storage Manager V6 in a clustered environment" on page 61
V6.2	V6.3 or later	"Upgrading Tivoli Storage Manager V6.2 to V6.3 or later in a clustered environment" on page 83
V6.1	V6.3.3 or later	"Upgrading Tivoli Storage Manager V6.1 to V6.3.3 or later in a clustered environment" on page 85
V6.1	V6.3.2 or earlier	"Upgrading Tivoli Storage Manager V6.1 to V6.3.2 or earlier in a clustered environment" on page 87
V5	V6.3.3 or later	<i>Upgrade and Migration Guide for V5 Servers</i>
V5	V6.3.2 or earlier	<i>Upgrade and Migration Guide for V5 Servers</i>

Upgrading Tivoli Storage Manager V6.2 to V6.3 or later in a clustered environment

To upgrade Tivoli Storage Manager from V6.2 to V6.3 or later in a Windows clustered environment, stop the cluster service on each node and install Tivoli Storage Manager V6.3 or later. Then, restart the cluster service.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

You can upgrade the server on the same system or migrate the server to a new target system with a new operating system. Before you upgrade or migrate the server, ensure that Microsoft Windows Server 2008, Microsoft Windows Server 2008 R2, or Microsoft Windows Server 2012 is installed on the target system. You can use Windows Server 2012 only if you are upgrading or migrating the system to Tivoli Storage Manager V6.3.4 or later.

To upgrade Tivoli Storage Manager from V6.2 to V6.3 or later in a Windows clustered environment, complete the following steps:

1. If you are upgrading or migrating a server to Windows Server 2012, install the failover cluster automation server and the failover cluster command interface. To install these components, issue the following commands from Windows 2.0 PowerShell:

```
Install-WindowsFeature -Name RSAT-Clustering-AutomationServer
Install-WindowsFeature -Name RSAT-Clustering-CmdInterface
```

2. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, issue the following command:

```
backup db type=dbsnapshot devclass=tapeclass
```

3. Back up the device configuration information. Issue the following command:

```
backup devconfig filenames=file_name
```

where *file_name* specifies the name of the file in which to store device configuration information.

4. Back up the volume history information. Issue the following command:

```
backup volhistory filenames=file_name
```

where *file_name* specifies the name of the file in which to store the volume history information.

5. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
6. Disable automatic failback. The reason for disabling automatic failback is that, during the installation, you must restart the server. The cluster service then restarts automatically. Automatic failback must be disabled so that no groups automatically fail back.
 - a. In the Failover Cluster Manager window, select **Services and Applications** and right-click the cluster group.
 - b. Select **Properties**.

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- c. On the **Failover** tab, select **Prevent failback** and click **OK**.
 - d. If multiple groups exist, repeat the preceding steps to disable automatic failback.
7. Determine the first node on which to install Tivoli Storage Manager V6.3 or later. Complete steps 8 through 12 on that node.
8. Move the Tivoli Storage Manager resource groups off the node where V6.3 or later is to be installed:
 - a. In the Failover Cluster Manager window, click **Services and Applications**.
 - b. Right-click the resource group and select **Move this service or application to another node**.
9. Stop the cluster service:
 - a. To open the Services window, issue the following command:
`services.msc`
 - b. In the Services window, right-click **Cluster Service** and click **Stop**.
10. Install Tivoli Storage Manager V6.3 or later. For details, see Installing the Tivoli Storage Manager server components.

Tip: Tivoli Storage Manager is still running and available on another node. If the DB2 installation attempts to access an offline instance, near the end of the installation, you might receive error message SQL5005C. This message does not indicate an installation failure.

11. Restart the cluster service on the current node. In the Component Services window, right-click **Cluster Service** and click **Start**.
12. Move the Tivoli Storage Manager resource group to the node where Tivoli Storage Manager V6.3 or later is installed:
 - a. In the Failover Cluster Manager window, click **Services and Applications**.
 - b. Right-click the resource group and select **Move this service or application to another node**.
13. For each additional node in the cluster, repeat Steps 9 through 11.
14. If automatic failback was turned off in Step 1, turn it back on:
 - a. In the Failover Cluster Manager window, right-click the cluster group.
 - b. Select **Properties**.
 - c. On the **Failover** tab, select **Allow failback**, and click **OK**.
15. Register the licenses for the Tivoli Storage Manager server components that are installed on your system by issuing the **REGISTER LICENSE** command:
`register license file=*.lic`
For more information about the **REGISTER LICENSE** command, see the **REGISTER LICENSE** section in the *Administrator's Reference*.

Restriction: You cannot register licenses for Tivoli Storage Manager for Mail, Tivoli Storage Manager for Databases, Tivoli Storage Manager for ERP, and Tivoli Storage Manager for Space Management.

For information about setting up clustered environments, see the section about configuring a Windows clustered environment in the *Administrator's Guide*.

Upgrading Tivoli Storage Manager V6.1 to V6.3.3 or later in a clustered environment

To upgrade Tivoli Storage Manager from V6.1 to V6.3.3 or later in a Windows clustered environment, several steps are required.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

You can upgrade the server on the same system or migrate the server to a new target system with a new operating system. Before you upgrade or migrate the server, ensure that Microsoft Windows Server 2008, Microsoft Windows Server 2008 R2, or Microsoft Windows Server 2012 is installed on the target system. You can use Windows Server 2012 only if you are upgrading or migrating the system to Tivoli Storage Manager V6.3.4 or later.

To upgrade Tivoli Storage Manager from V6.1 to V6.3.3 or later in a Windows clustered environment, complete the following steps:

1. If you are upgrading or migrating a server to Windows Server 2012, install the failover cluster automation server and the failover cluster command interface. To install these components, issue the following commands from Windows 2.0 PowerShell:

```
Install-WindowsFeature -Name RSAT-Clustering-AutomationServer
Install-WindowsFeature -Name RSAT-Clustering-CmdInterface
```

2. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, issue the following command:
`backup db type=dbsnapshot devclass=tapeclass`
3. Back up the device configuration information. Issue the following command:
`backup devconfig filenames=file_name`

where *file_name* specifies the name of the file in which to store device configuration information.

4. Back up the volume history information. Issue the following command:
`backup volhistory filenames=file_name`

where *file_name* specifies the name of the file in which to store the volume history information.

5. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
6. Ensure that the resource group is on the primary node, and that all nodes in the cluster are running. Unless otherwise noted, complete the following steps on the primary node.
7. In the Failover Cluster Manager window, take the Tivoli Storage Manager server resource and the DB2 server resource offline. Then, delete the Tivoli Storage Manager server resource:
 - a. Select **Services and applications**, and then select the cluster group. The Tivoli Storage Manager server resource is displayed in the **Other Resources** section.

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- b. Select the Tivoli Storage Manager server resource and click **Take this resource offline**. Repeat this step for the DB2 server resource, for example, SERVER1.
 - c. To delete the Tivoli Storage Manager server resource, select it and click **Delete**.
8. In the Failover Cluster Manager window, note the network name and IP address and delete this information:
 - a. In the **Server name** section, expand the network name to view the IP address. Note the network name and IP address.
 - b. Select the network name and the IP address and click **Delete**.
9. To remove DB2 clustering from the instance, for each Tivoli Storage Manager instance in the cluster, issue the following command:
`db2mcs -u:instancename`

For example:

```
db2mcs -u:server1
```

Tip: You might see an error message about a missing cluster resource. Ignore this message.

10. In the Failover Cluster Manager window, in the resource group **Summary** section, verify that only the shared disks and any tape resources remain in the resource group.
11. Install Tivoli Storage Manager V6.3.3 or later on each node in the cluster. For details, see Installing the Tivoli Storage Manager server components.
12. Start the configuration wizard by clicking **Start > All Programs > Tivoli Storage Manager > Configuration Wizard**. Step through the configuration wizard. When you are prompted to enter the instance name, enter the name of the instance that you are recluster. When prompted to enter the user ID, enter the name of the domain account that is associated with the cluster. When prompted to indicate whether you want to recluster, click **Yes**. Continue stepping through the wizard until you see a message that the configuration was successful.
13. Register the licenses for the Tivoli Storage Manager server components that are installed on your system by issuing the **REGISTER LICENSE** command:
`register license file=*.lic`

For more information about the **REGISTER LICENSE** command, see the REGISTER LICENSE section in the *Administrator's Reference*.

Restriction: You cannot register licenses for Tivoli Storage Manager for Mail, Tivoli Storage Manager for Databases, Tivoli Storage Manager for ERP, and Tivoli Storage Manager for Space Management.

For information about setting up clustered environments, see the section about configuring a Windows clustered environment in the *Administrator's Guide*.

Upgrading Tivoli Storage Manager V6.1 to V6.3.2 or earlier in a clustered environment

To upgrade Tivoli Storage Manager from V6.1 to V6.3.2 or earlier in a Windows clustered environment, several steps are required.

Tip: Some steps in this procedure require that you run the Microsoft Management Console (MMC). When you do so, you might get error message ANRU1203E. Continue by clicking **OK** > **NEXT**. You might be required to repeat this action several times.

Before you upgrade the Tivoli Storage Manager server, ensure that you retain the installation media from the base release of the installed server. If you installed Tivoli Storage Manager from a DVD, ensure that the DVD is available. If you installed Tivoli Storage Manager from a downloaded package, ensure that the downloaded files are available. If the upgrade fails, and the server license module is uninstalled, the installation media from the server base release are required to reinstall the license.

To upgrade Tivoli Storage Manager from V6.1 to V6.3.2 or earlier in a Windows clustered environment, complete the following steps:

1. Back up the database. The preferred method is to use a snapshot backup. A snapshot backup is a full database backup that does not interrupt any scheduled database backups. For example, issue the following command:

```
backup db type=dbsnapshot devclass=tapeclass
```

2. Back up the device configuration information. Issue the following command:

```
backup devconfig filenames=file_name
```

where *file_name* specifies the name of the file in which to store device configuration information.

3. Back up the volume history information. Issue the following command:

```
backup volhistory filenames=file_name
```

where *file_name* specifies the name of the file in which to store the volume history information.

4. Save a copy of the server options file, typically named `dsmserv.opt`. The file is in the server instance directory.
5. Ensure that the resource group is on the primary node, and that all nodes in the cluster are running. Unless otherwise noted, complete the following steps on the primary node.
6. In the Failover Cluster Manager window, take the Tivoli Storage Manager server resource and the DB2 server resource offline. Then, delete the Tivoli Storage Manager server resource:
 - a. Select **Services and applications**, and then select the cluster group. The Tivoli Storage Manager server resource is displayed in the **Other Resources** section.
 - b. Select the Tivoli Storage Manager server resource and click **Take this resource offline**. Repeat this step for the DB2 server resource, for example, SERVER1.
 - c. To delete the Tivoli Storage Manager server resource, select it and click **Delete**.
7. In the Failover Cluster Manager window, note the network name and IP address and delete this information:

Upgrading the Tivoli Storage Manager server

- a. In the **Server name** section, expand the network name to view the IP address. Note the network name and IP address.
 - b. Select the network name and the IP address and click **Delete**.
8. To remove DB2 clustering from the instance, for each Tivoli Storage Manager instance in the cluster, issue the following command:

```
db2mcs -u:instancename
```

For example:

```
db2mcs -u:server1
```

Tip: You might see an error message about a missing cluster resource. Ignore this message.

9. In the Failover Cluster Manager window, in the resource group **Summary** section, verify that only the shared disks and any tape resources remain in the resource group.
10. Move the resource group from the primary node to the node that is being updated. On each secondary node, go to the MMC. Select the server instance and click **Delete server instance**. The MMC provides a choice of resources to delete. Delete the server instance and the registry entries for the server and console. Do not select any other files for deletion. Exit the MMC before you move to the next node.
11. Starting with the primary node, switch the resource group to the node that is being updated, and install Tivoli Storage Manager V6.3.2 or earlier on each node in the cluster.

Important: Before you install the server, ensure that no windows are opened to DB2 directories; otherwise, the DB2 installation fails.

12. Ensure that the primary node owns the resource group and that all nodes in the cluster are running. From the MMC on the primary node, run the Cluster Configuration wizard. If you have multiple instances, repeat this procedure for each instance that you plan to reuse. Update these instances in the same order that was used originally. The MMC names the first server instance SERVER1, the second SERVER2, and so on.
13. Move the cluster resources to the next node to be configured. To initialize and configure the server, in MMC, run the Server Initialization Wizard on the appropriate node. Then, run the Cluster Configuration Wizard on each node. When the last node in the cluster is configured, the Tivoli Storage Manager server is clustered.

Tip: When you configure on the second node, you might see the following message: ANRU1119E A problem was encountered while interpreting Tivoli Storage Manager administration results. The wizard will not continue. Report this to Tivoli Storage Manager technical support. If you see this message, click **OK > Finish**.

14. Register the licenses for the Tivoli Storage Manager server components that are installed on your system by issuing the **REGISTER LICENSE** command:

```
register license file=*.lic
```

For more information about the **REGISTER LICENSE** command, see the REGISTER LICENSE section in the *Administrator's Reference*.

Restriction: You cannot register licenses for Tivoli Storage Manager for Mail, Tivoli Storage Manager for Databases, Tivoli Storage Manager for ERP, and Tivoli Storage Manager for Space Management.

For information about setting up clustered environments, see the section about configuring a Windows clustered environment in the *Administrator's Guide*.

Removing GSKit Version 7 after upgrading to Tivoli Storage Manager V6.3 or later

The Tivoli Storage Manager installation wizard upgrades GSKit Version 8 and later. GSKit Version 7 is not removed or upgraded when you upgrade to Tivoli Storage Manager Version 6.3 or later, even if it was installed with an earlier version of Tivoli Storage Manager.

If you no longer need GSKit Version 7 and want to free up space on your system, you can remove it after the upgrade to Tivoli Storage Manager Version 6.3 or later.

Important: Removing GSKit7 might affect other programs on your system that rely on it.

To remove GSKit Version 7, complete the following steps:

1. Back up your registry.
 - a. Click **Start**, and then click **Run**.
 - b. Type `Regedit`. Click **OK**.
 - c. To save a copy of your registry, select **File > Export**.
 - d. If you must later restore the registry, select **File > Import**.

For additional details, see the Windows documentation.

2. Locate the directory where the GSKit is installed. The default directory is `C:\Program Files\IBM\gsk7\`.
3. Remove the GSKit installation directory, `gsk7`, and all subfiles and directories. Right-click the folder and click **Delete**.
4. Remove the GSKit 7 registry key and all subkeys and values.

Important: Removing the wrong key can cause system problems such as not being able to restart the workstation.

- a. Click **Start**, and then click **Run**.
- b. Type `Regedit`. Click **OK**.
- c. The GSKit registry key is in this directory: `HKEY_LOCAL_MACHINE\SOFTWARE\IBM`. Right-click the registry key, `HKEY_LOCAL_MACHINE\SOFTWARE\IBM\GSK7`, and click **Delete**.

Chapter 6. Reverting from Version 6.3 or later to the previous Version 6 server

If you must revert to the previous version of the server after an upgrade, you must have a full database backup from your original version. You must also have the server installation media for your original version and key configuration files. Carefully follow the preparation steps before you upgrade the server. By doing so, it might be possible to revert to the previous version of the Tivoli Storage Manager server with minimal loss of data.

You must have the following items from the earlier version of the server:

- Server database backup
- Volume history file
- Device configuration file
- Server options file

Use the same instructions whether you are reverting within releases or to an earlier release, for example, from 6.2.2 to 6.2.0 or from 6.2.2 to 6.1.2. The older version must match the version that you used before the upgrade to 6.3 or later.

Attention: Specify the **REUSEDELAY** parameter to help prevent backup-archive client data loss when you revert the server to a previous version.

Steps for reverting to the previous server version

Complete the following steps on the system that has the Version 6.3 or later server.

1. Back up the Version 6.3 or later database. Save the contents of the instance directory, including the volume history file, the device configuration file, and server options file. Keep these files if you want to return to the Version 6.3 or later version of the server.
2. Halt the server to shut down all server operations by using the **HALT** command.
3. Remove the database from the database manager, then delete the database and recovery log directories.
 - a. Manually remove the database. One way to remove it is by issuing this command:

```
dsmserv -k instance_name removedb tsmdb1
```
 - b. If you must reuse the space that is occupied by the database and recovery log directories, you can now delete these directories.
4. Use the uninstallation program to uninstall the Version 6.3 or later server. Uninstallation removes the server and the database manager, with their directories. For details, see Chapter 8, “Uninstalling Tivoli Storage Manager,” on page 101.
5. Reinstall the version of the server program that you were using before the upgrade to Version 6.3 or later. This version must match the version that your server was running when you created the database backup that you restore in a later step. For example, the server was at version 6.2.2.0 before the upgrade, and you intend to use the database backup that was in use on this server. You must install the 6.2.2.0 fix pack to be able to restore the database backup.
6. Copy the following files to the instance directory.

Reverting to a previous Version 6 server version

- Device configuration file
 - Volume history file
 - The server options file (typically `dsmserv.opt`)
7. If you are reverting to a version at or earlier than 6.1.2, complete the following steps.
 - a. Locate the instance file:

Instance.dat in the Tivoli Storage Manager server installation directory
 - b. Recreate each of the instances in the instance file by issuing the **db2icrt** command:

```
installation_directory \db2\instance\db2icrt InstanceName  
-u InstanceUser,password
```
 - c. Recreate the variables in the instance file by issuing the **db2set -i** command. Issue this command for each variable in your instance file. Ensure that the variable is in quotation marks:

```
installation_directory\db2\instance\db2set -i  
InstanceName "Variable"
```
 8. Format the database by using the **DSMSERV FORMAT** utility. For details, see the information for the version of the server that you are reinstalling.

Information for Version 6.2 is available at this information center:
<http://pic.dhe.ibm.com/infocenter/tsminfo/v6r2>.

Information for Version 6.1 is available at this information center:
<http://publib.boulder.ibm.com/infocenter/tsminfo/v6>.
 9. Restore the database to a point in time before the upgrade. For more details, see the restoring the server database to a point in time section in the *Administrator's Guide*.
 10. If you enabled data deduplication for any FILE-type storage pools that existed before the upgrade, or if you moved data that existed before the upgrade into new storage pools while using the Version 6.3 or later server, you must complete additional recovery steps. For more details, see “Additional recovery steps if you created new storage pools or enabled data deduplication” on page 93.
 11. If the **REUSEDELAY** parameter setting on storage pools is less than the age of the database that you restored, restore volumes on any sequential-access storage pools that were reclaimed after that database backup. Use the **RESTORE VOLUME** command.

If you do not have a backup of a storage pool, audit the reclaimed volumes by using the **AUDIT VOLUME** command, with the **FIX=YES** parameter to resolve inconsistencies. For example:

```
audit volume volume_name fix=yes
```
 12. If client backup or archive operations were completed using the Version 6.3 or later server, audit the storage pool volumes on which the data was stored.
 13. If you were using active-data pools before you upgraded to Version 6.3 or later, you must recreate them.

The amount of time required to recreate the active-data pools might be significant, depending on the number and size of the active-data pools to be recreated.

Additional recovery steps if you created new storage pools or enabled data deduplication

If you created new storage pools, turned on data deduplication for any FILE-type storage pools, or did both while your server was running as a Version 6.3 or later server, you must complete more steps to return to the previous server version.

To complete this task, you must have a complete backup of the storage pool that was created before the upgrade to Version 6.3 or later.

Use this information if you did either or both of the following actions while your server was running as a Version 6.3 or later server:

- You enabled the data deduplication function for any storage pools that existed before the upgrade to Version 6.3 or later program. Data deduplication applies only to storage pools that use a FILE device type.
- You created new, primary storage pools after the upgrade, *and* moved data that was stored in other storage pools into the new storage pools.

Perform these steps after the server is again restored to V6.1 or V6.2.

- For each storage pool for which you enabled the data deduplication function, restore the entire storage pool by using the **RESTORE STGPPOOL** command.
- For storage pools that you created after the upgrade, determine what action to take. Data that was moved from existing, V6.1 or V6.2 storage pools into the new storage pools might be lost because the new storage pools no longer exist in your restored V6.1 or V6.2 server. Possible recovery depends on the type of storage pool:
 - If data was moved from V6.1 or V6.2 DISK-type storage pools into a new storage pool, space that was occupied by the data that was moved was probably reused. Therefore, you must restore the original, V6.1 or V6.2 storage pools, by using the storage pool backups that were created before the upgrade to Version 6.3 or later.

If *no* data was moved from V6.1 or V6.2 DISK-type storage pools into a new storage pool, then audit the storage pool volumes in these DISK-type storage pools.

- If data was moved from V6.1 or V6.2 sequential-access storage pools into a new storage pool, that data might still exist and be usable in storage pool volumes on the restored V6.1 or V6.2 server. The data might be usable if the **REUSEDELAY** parameter for the storage pool was set to a value that prevented reclamation while the server was running as a Version 6.3 or later server. If any volumes were reclaimed while the server was running as a Version 6.3 or later server, restore those volumes from storage pool backups that were created before the upgrade to Version 6.3 or later.

Reverting to the previous server version in a cluster configuration

If you must revert to the previous version of the server after an upgrade, you must have a full database backup from your original version. You must also have the server installation media for your original version and key configuration files. Carefully follow the preparation steps before you upgrade the server. By doing so, it might be possible to revert to the previous version of the Tivoli Storage Manager server with minimal loss of data.

You must have the following items from the earlier version of the server:

- Server database backup
- Volume history file
- Device configuration file
- Server options file

Steps for reverting to the previous server version

Complete the following steps on the system that has the Version 6.3 or later server.

1. Back up the Version 6.3 or later database. Save the contents of the instance directory, including the volume history file, the device configuration file, and server options file. Keep these files if you want to return to the Version 6.3 or later version of the server.
2. Delete the Tivoli Storage Manager server resource and the network resource in Microsoft Failover Cluster Manager.
 - a. Open Failover Cluster Manager. Under **Other Resources**, right-click the Tivoli Storage Manager instance resource. Select **Take this resource offline**.
 - b. Delete the Tivoli Storage Manager instance.
 - c. Under **Server Name**, expand the network name and record the cluster TCP/IP address.
 - d. Delete the network name.
3. Remove the DB2 cluster from the instance by issuing the following command:
`DB2mscs -u:instance_name`

For example, if the server instance is Server1, enter the command:

```
db2mscs -u:Server1
```

Tip: You might see an error message about a missing cluster resource. Disregard this message.

4. Remove the database. One way to remove it is by issuing this command:
`dsmserve -k instance_name removedb tsmdbl`
5. On each system in the cluster, delete the Tivoli Storage Manager Version 6.3 or later tsmsvrrsc DLL files by completing the following steps:
 - a. Stop the cluster service. One way to stop it is by using the Services Application. Right-click **Cluster Service** and select **Stop**.
 - b. Delete the tsmsvrrscnx64.dll and tsmsvrrscx64.dll files from the C:\Windows\Cluster directory.
 - c. Start the cluster service. One way to start it is by using the Services Application. Right-click **Cluster Service** and select **Start**.
6. If the Microsoft Management Console (MMC) was originally used to install the server, use the MMC to delete the server instance and registry entries. Complete this task on each node in the cluster.

7. Use the uninstallation program to uninstall the Version 6.3 or later server. Uninstallation removes the server and the database manager, with their directories. For details, see Chapter 8, “Uninstalling Tivoli Storage Manager,” on page 101.
8. Reinstall the version of the server program that you were using before the upgrade to Version 6.3 or later. This version must match the version that your server was running when you created the database backup that you restore in a later step. For example, the server was at version 6.2.2.0 before the upgrade, and you intend to use the database backup that was in use on this server. You must install the 6.2.2.0 fix pack to be able to restore the database backup.
9. Copy the following files to the instance directory.
 - Device configuration file
 - Volume history file
 - The server options file (typically `dsmserv.opt`)
10. Ensure that the primary node is the owner of the cluster resources. Then, use the MMC to initialize and configure a Tivoli Storage Manager server, including configuring a clustered environment. Cancel the device and node configuration wizards. For each remaining node in the cluster, move the cluster resources to the node to be configured. Next, use the MMC to initialize and configure the node for a clustered environment. Cancel the device and node configuration wizards.

Tip: If you are reverting to Tivoli Storage Manager 6.2.5, you can use the configuration wizard (`dsmicfgx`) instead of the MMC to start the server and configure it for clustering. Use this option only on the primary node.
11. Restore the database to a point in time before the upgrade. For more details, see the restoring the server database to a point in time section in the *Administrator's Guide*.

Reverting to a previous Version 6 server version

Chapter 7. Reference: DB2 commands for Tivoli Storage Manager server databases

Use this list as reference when you are directed to issue DB2 commands by IBM support.

Purpose

After using the wizards to install and configure Tivoli Storage Manager, you seldom need to issue DB2 commands. A limited set of DB2 commands that you might use or be asked to issue are listed in Table 22. This list is supplemental material only and is not a comprehensive list. There is no implication that a Tivoli Storage Manager administrator will use it on a daily or ongoing basis. Samples of some commands are provided. Details of output are not listed.

For a full explanation of the commands described here and of their syntax, see <http://pic.dhe.ibm.com/infocenter/db2luw/v9r7>.

Table 22. DB2 commands

Command	Description	Example
db2cmd	Opens the command line processor DB2 window, and initializes the DB2 command-line environment.	Open the DB2 command window: db2cmd
db2icrt	Creates DB2 instances in the home directory of the instance owner. Tip: The Tivoli Storage Manager configuration wizard creates the instance used by the server and database. After a server is installed and configured through the configuration wizard, the db2icrt command is generally not used. This utility is located in the DB2PATH\bin directory where DB2PATH is the location where the DB2 copy is installed.	Manually create a Tivoli Storage Manager instance. Enter the command on one line: /opt/tivoli/tsm/db2/instance/ db2icrt -a server -s ese -u instance_name instance_name
db2set	Displays DB2 variables.	List DB2 variables: db2set
CATALOG DATABASE	Stores database location information in the system database directory. The database can be located either on the local workstation or on a remote database partition server. The server configuration wizard takes care of any catalog needed for using the server database. Run this command manually, after a server is configured and running, only if something in the environment changes or is damaged.	Catalog the database: db2 catalog database tsmdb1
CONNECT TO DATABASE	Connects to a specified database for command-line interface (CLI) use.	Connect to the Tivoli Storage Manager database from a DB2 CLI: db2 connect to tsmdb1

Reference: DB2 commands for Tivoli Storage Manager server databases

Table 22. DB2 commands (continued)

Command	Description	Example
GET DATABASE CONFIGURATION	Returns the values of individual entries in a specific database configuration file. Important: This command and parameters are set and managed directly by DB2. They are listed here for informational purposes and a means to view the existing settings. Changing these settings might be advised by IBM support or through service bulletins such as APARs or Technical Guidance documents (technotes). Do not change these settings manually. Change them only at the direction of IBM and only through the use of Tivoli Storage Manager server commands or procedures.	Show the configuration information for a database alias: db2 get db cfg for tsmdb1 Retrieve information in order to verify settings such as database configuration, log mode, and maintenance. db2 get db config for tsmdb1 show detail
GET DATABASE MANAGER CONFIGURATION	Returns the values of individual entries in a specific database configuration file. Important: This command and parameters are set and managed directly by DB2. They are listed here for informational purposes and a means to view the existing settings. Changing these settings might be advised by IBM support or through service bulletins such as APARs or Technical Guidance documents (technotes). Do not change these settings manually. Change them only at the direction of IBM and only through the use of Tivoli Storage Manager server commands or procedures.	Retrieve configuration information for the database manager: db2 get dbm cfg
GET HEALTH SNAPSHOT	Retrieves the health status information for the database manager and its databases. The information returned represents a snapshot of the health state at the time the command was issued. Tivoli Storage Manager monitors the state of the database using the health snapshot and other mechanisms that are provided by DB2. There might be cases where the health snapshot or other DB2 documentation indicates that an item or database resource might be in an alert state. Such a case indicates that action must be considered to remedy the situation. Tivoli Storage Manager monitors the condition and responds appropriately. Not all declared alerts by the DB2 database are acted on.	Receive a report on DB2 health monitor indicators: db2 get health snapshot for database on tsmdb1
GRANT (Database Authorities)	Grants authorities that apply to the entire database rather than privileges that apply to specific objects within the database.	Grant access to the user ID itmuser: db2 GRANT CONNECT ON DATABASE TO USER itmuser db2 GRANT CREATETAB ON DATABASE TO USER itmuser

Table 22. DB2 commands (continued)

Command	Description	Example
RUNSTATS	<p>Updates statistics about the characteristics of a table and associated indexes or statistical views. These characteristics include number of records, number of pages, and average record length.</p> <p>To see a table, issue this utility after updating or reorganizing the table.</p> <p>A view must be enabled for optimization before its statistics can be used to optimize a query. A view that is enabled for optimization is known as a statistical view. Use the DB2 ALTER VIEW statement to enable a view for optimization. Issue the RUNSTATS utility when changes to underlying tables substantially affect the rows returned by the view.</p> <p>Tip: The server configures DB2 to run the RUNSTATS command as needed.</p>	<p>Update statistics on a single table.</p> <pre>db2 runstats on table SCHEMA_NAME.TABLE_NAME with distribution and sampled detailed indexes all</pre>
set db2instance	Determines which instance applies to the current session.	<p>Determine which instance is applicable:</p> <pre>set db2instance=tsminst1</pre>
SET SCHEMA	<p>Changes the value of the CURRENT SCHEMA special register, in preparation for issuing SQL commands directly through the DB2 CLI.</p> <p>Tip: A special register is a storage area that is defined for an application process by the database manager. It is used to store information that can be referenced in SQL statements.</p>	<p>Set the schema for Tivoli Storage Manager:</p> <pre>db2 set schema tsmdb1</pre>
START DATABASE MANAGER	<p>Starts the current database manager instance background processes. The Tivoli Storage Manager server starts and stops the instance and database whenever the server starts and halts.</p> <p>Important: Allow the Tivoli Storage Manager server to manage the starting and stopping of the instance and database unless otherwise directed by IBM support.</p>	<p>Start the database manager:</p> <pre>db2start</pre>
STOP DATABASE MANAGER	<p>Stops the current database manager instance. Unless explicitly stopped, the database manager continues to be active. This command does not stop the database manager instance if any applications are connected to databases. If there are no database connections, but there are instance attachments, the command forces the instance attachments to stop first. Then, it stops the database manager. This command also deactivates any outstanding database activations before stopping the database manager.</p> <p>This command is not valid on a client.</p> <p>The Tivoli Storage Manager server starts and stops the instance and database whenever the server starts and halts.</p> <p>Important: Allow the Tivoli Storage Manager server to manage the starting and stopping of the instance and database unless otherwise directed by IBM support.</p>	<p>Stop the database manager:</p> <pre>db2 stop dbm</pre>

Reference: DB2 commands for Tivoli Storage Manager server databases

Chapter 8. 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 37 for details about creating a server instance.

Attention: 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 6.3 or later. 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`

Uninstalling Tivoli Storage Manager

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 the Tivoli Storage Manager server components,” on page 27 for installation steps to reinstall the Tivoli Storage Manager 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 or Version 6.2, 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. Click **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 in the **Log On As** column.
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 8, “Uninstalling Tivoli Storage Manager,” on page 101.

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 the Tivoli Storage Manager server components,” on page 27.
6. Recreate your server instances. See “Creating the server instance” on page 43.

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.

Uninstalling Tivoli Storage Manager

Part 2. Installing and upgrading Tivoli Monitoring for Tivoli Storage Manager

IBM Tivoli Monitoring for Tivoli Storage Manager brings together multiple components to monitor Tivoli Storage Manager servers, and to produce historical reports about server and client activities.

Chapter 9. Installing Tivoli Monitoring for Tivoli Storage Manager

Tivoli Monitoring for Tivoli Storage Manager brings together multiple components, to provide real-time monitoring, and historical reporting for your Tivoli Storage Manager servers.

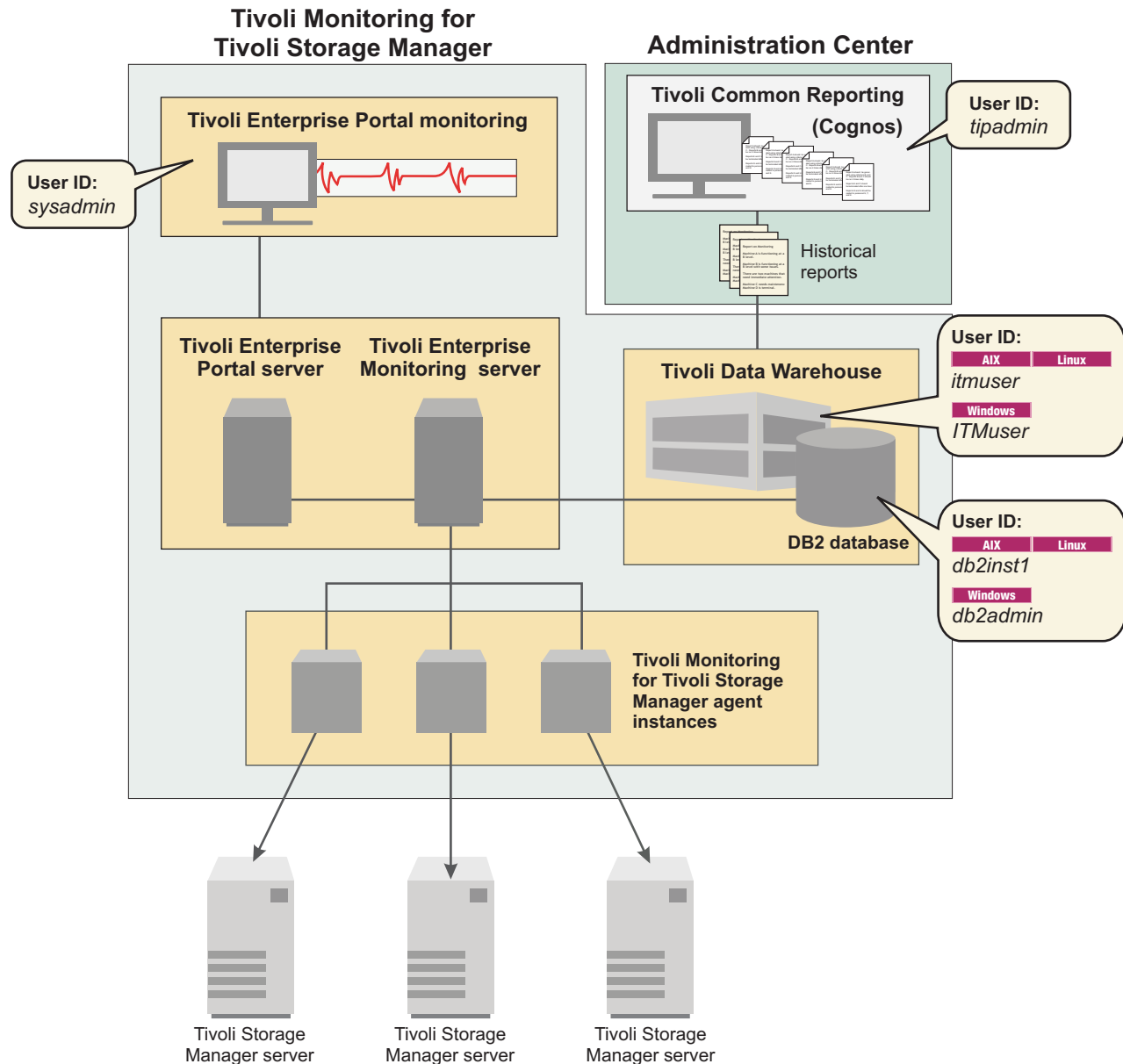


Figure 4. Tivoli Monitoring for Tivoli Storage Manager components that provide the reporting and monitoring capabilities

Building a system that can monitor data and produce reports includes the following tasks:

Installing Tivoli Monitoring for Tivoli Storage Manager

1. Installing Tivoli Monitoring for Tivoli Storage Manager, which includes these components:
 - IBM DB2
 - IBM Tivoli Monitoring, which includes:
 - Tivoli Enterprise Portal server
 - Tivoli Data Warehouse
 - Tivoli Enterprise Monitoring server
 - Summarization Pruning agent
 - Warehouse Proxy agent
 - Tivoli Monitoring for Tivoli Storage Manager agent
2. Creating and configuring the agent instance to point to the Tivoli Storage Manager servers that you want to monitor.
3. Installing the Administration Center, including the Tivoli Common Reporting component, to view historical reports.

Note: The Administration Center, Tivoli Monitoring for Tivoli Storage Manager, and the monitoring agents must all be at version 6.3 or later. The Tivoli Storage Manager server that you want to monitor can be V5.4 - V6.3 or later.

Related tasks:

“Installing using the installation wizard” on page 119

Chapter 19, “Installing and configuring the Administration Center,” on page 179

“Creating and configuring the agent instance” on page 123

Related reference:

“Installation checklist” on page 116

Planning to install

Be sure to review all applicable planning information, including system requirements, capacity planning, and installation scenarios, before installing.

Before you install the software, complete these tasks:

1. Choose an installation scenario that best suits your needs.
2. Read the system requirements that are required for your operating system.
3. Review the capacity planning information.
4. Review the installation work sheet and note the user IDs, passwords, and other values that are required during installation.
5. Optionally run the prerequisite checker to verify the readiness of your installation environment.

To view historical reports, you must install the Administration Center, including the Tivoli Common Reporting component, on the same system where you installed Tivoli Monitoring for Tivoli Storage Manager. You can install either one first, but you must select the Tivoli Common Reporting component during the Administration Center installation.

If you installed the Administration Center without the Tivoli Common Reporting component, you must rerun the Administration Center installer to install the Tivoli Common Reporting component and to view historical reports.

Restriction: Install the Administration Center and Tivoli Monitoring for Tivoli Storage Manager on a system that is different than the system where the Tivoli

Storage Manager server is installed.

Installation scenarios

Before installing Tivoli Monitoring for Tivoli Storage Manager, choose the scenario that best meets the needs of your business.

- Scenario 1: New installation, intending to monitor 1 - 5 Tivoli Storage Manager servers.
- Scenario 2: New installation, intending to monitor more than 5 Tivoli Storage Manager servers.
- Scenario 3: Installing in to an existing IBM Tivoli Monitoring environment, intending to monitor 1 - 5 Tivoli Storage Manager servers.
- Scenario 4: Installing in to an existing IBM Tivoli Monitoring environment, intending to monitor more than 5 Tivoli Storage Manager servers.

Important Notes:

1. If you have a Tivoli Storage Manager server that is in a different timezone than the system with Tivoli Monitoring for Tivoli Storage Manager, install the monitoring agent on the Tivoli Storage Manager server. See Scenario 2 to install the agent directly on the Tivoli Storage Manager server.
2. If you have more than five servers, installing the monitoring agent on each of the Tivoli Storage Manager servers is the most efficient use of memory on both the Tivoli Storage Manager server, and the Tivoli Monitoring for Tivoli Storage Manager server.

Table 23. Installation scenarios

Scenario Number	Description	Tasks that you must complete
Scenario 1	Use this scenario for a new installation with a plan to monitor and report on 1- 5 Tivoli Storage Manager servers.	<p>Perform all the tasks in this scenario on the same system:</p> <ol style="list-style-type: none"> 1. Install Tivoli Monitoring for Tivoli Storage Manager. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. 2. Configure the agent instance that was installed as part of the Tivoli Monitoring for Tivoli Storage Manager installation package. The approximate configuration time is 10 minutes. 3. Install the Administration Center on the same system as Tivoli Monitoring for Tivoli Storage Manager. Ensure that you select the Tivoli Common Reporting component during installation. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor.

Installing Tivoli Monitoring for Tivoli Storage Manager

Table 23. Installation scenarios (continued)

Scenario Number	Description	Tasks that you must complete
Scenario 2	Use this scenario for a new installation with a plan to monitor and report on more than 5 Tivoli Storage Manager servers.	<ol style="list-style-type: none"> 1. Install Tivoli Monitoring for Tivoli Storage Manager. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. 2. Install monitoring agents on each Tivoli Storage Manager server that you want to monitor. The approximate installation time is 15 - 30 minutes per additional agent. 3. Configure the agents to point to the Tivoli Enterprise Monitoring server host installed in Step 1. The approximate configuration time is 10 minutes per agent. 4. Install the Administration Center on the same system as Tivoli Monitoring for Tivoli Storage Manager. Ensure that you select the Tivoli Common Reporting component during installation. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor. <p>Restriction: The monitoring agent is not supported on Solaris, HP, and Linux ppc64.</p>
Scenario 3	Use this scenario when you install the software into an existing IBM Tivoli Monitoring environment with a plan to monitor up to 5 Tivoli Storage Manager servers.	<ol style="list-style-type: none"> 1. Install the new monitoring agent on the IBM Tivoli Monitoring server where Tivoli Enterprise Monitoring server and Tivoli Enterprise Portal server are installed. The approximate installation time is 15 - 30 minutes per additional agent. 2. Configure each agent to point to the system where the Tivoli Enterprise Monitoring server and Tivoli Enterprise Portal server are installed. The approximate configuration time is 10 minutes per agent. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor.

Table 23. Installation scenarios (continued)

Scenario Number	Description	Tasks that you must complete
Scenario 4	Use this scenario when you install the software into an existing IBM Tivoli Monitoring environment with a plan to monitor more than 5 Tivoli Storage Manager servers.	<ol style="list-style-type: none"> 1. Install the new monitoring agent on the Tivoli Storage Manager server that you want to monitor. The approximate installation time is 15 - 30 minutes per additional agent. 2. Configure each agent to point to the system where the Tivoli Enterprise Monitoring server and Tivoli Enterprise Portal server are installed. The approximate configuration time is 10 minutes per agent. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor. <p>Restriction: The monitoring agent is not supported on Solaris, HP, and Linux ppc64.</p>

Related tasks:

“Installing using the installation wizard” on page 119

Related reference:

“Installation worksheet” on page 114

“Installation checklist” on page 116

System requirements for Tivoli Monitoring for Tivoli Storage Manager

Review the hardware and software requirements applicable for your system before you install Tivoli Monitoring for Tivoli Storage Manager.

Other than installing the Tivoli Monitoring for Tivoli Storage Manager, you can install the monitoring agent separately on your Tivoli Storage Manager servers. The monitoring agent is supported on any Tivoli Storage Manager server except for the following operating systems:

- Solaris
- HP
- Linux PPC

Related tasks:

“Capacity planning” on page 114

“Running the prerequisite checker” on page 118

Related reference:

“Installation worksheet” on page 114

“Installation checklist” on page 116

System requirements

There are hardware and software requirements that your system must meet before you install Tivoli Monitoring for Tivoli Storage Manager on a Windows system.

These tables list the minimum hardware and software requirements needed to install Tivoli Monitoring for Tivoli Storage Manager. Use these requirements as a starting point, but you can find the latest information at <http://www.ibm.com/support/docview.wss?uid=swg21569311>.

Table 24 describes the hardware requirements for the Tivoli Monitoring for Tivoli Storage Manager.

Table 24. 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 2 GHz or greater processor• Network interface card• Remote registry service must be enabled. For more information visit the Microsoft website.
Disk space	<ul style="list-style-type: none">• 10 GB free space in the home directory where the warehouse data is stored (minimum).• 30 GB free disk space (minimum). The requirements increase as historical data is gathered and stored in Tivoli Data Warehouse.
Memory	<ul style="list-style-type: none">• 3-GB minimum• If Tivoli Storage Manager monitoring agents are installed on the IBM 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 running on the Tivoli Storage Manager server and no increases in memory requirements are needed by the IBM Tivoli Monitoring server.
Monitor	Set your display resolution to 1024 x 768 (minimum) to view the entire window.

Table 25 describes the minimum software requirements for Tivoli Monitoring for Tivoli Storage Manager.

Table 25. Software requirements

Type of software	Minimum software requirements
Operating system	<ul style="list-style-type: none">• Windows server 2008 x86 32-bit• Windows server 2008, R2 x64 <p>Important: If you are installing a Tivoli Monitoring for Tivoli Storage Manager agent, and you previously installed an IBM Tivoli Monitoring server, you must install the Tivoli Monitoring for Tivoli Storage Manager agent on the existing Tivoli Enterprise Monitoring server. Tivoli Monitoring for Tivoli Storage Manager only can be used with IBM Tivoli Monitoring, version 6.2.2 FP2 or later.</p>

Table 25. Software requirements (continued)

Type of software	Minimum software requirements
Web browser	<p>A web browser is required to use the Tivoli Common Reporting interface. Access Tivoli Common Reporting and the Administration Center with the Tivoli Integrated Portal. The browser can be installed on the same or separate system. The following browsers are supported:</p> <ul style="list-style-type: none"> • Microsoft Internet Explorer 6.x • Microsoft Internet Explorer 7 • Microsoft Internet Explorer 8 • Firefox version 3.5 • Firefox version 3.6 cannot be used with Windows Server 2008 <p>IBM Java version 5 is required to start Tivoli Enterprise Portal.</p> <p>Oracle Java is not supported.</p> <p>If the Common Reporting portlet is blank when opened in Internet Explorer 7, the default security settings might be too restrictive. Complete these steps to modify the security settings:</p> <ol style="list-style-type: none"> 1. In an Internet Explorer version 7 window, click Tools > Internet Options, and on the Security tab, click Custom level. 2. Locate the Miscellaneous category, disable the Access data sources across domains option, and click OK to apply the changes. <p>Tip: If your browser still does not display correctly, consider using a different browser.</p> <p>To avoid potential compatibility issues with web browsers you can view the Tivoli Enterprise Portal remotely using the Java web Start applet:</p> <ol style="list-style-type: none"> 1. Connect to <code>http://hostname:1920</code>. 2. Click IBM Tivoli Enterprise Portal Webstart Client to start the Java Web Start client. 3. Optionally create a desktop shortcut to launch the Tivoli Enterprise Portal in the future.
Communication Protocol	<p>You must have at least one of the following communication protocols:</p> <ul style="list-style-type: none"> • Named Pipes • TCP/IP Version 4 or Version 6
X Window System or X11 GUI	<p>You must have an X11 Windows server running.</p>
Other software	<p>Eclipse 3.3 and Business Intelligence and Reporting Tools (BIRT), version 2.2.1 are required for creating custom BIRT reports.</p>

Related tasks:

“Capacity planning” on page 114

“Running the prerequisite checker” on page 118

“Installing using the installation wizard” on page 119

Related reference:

“Installation worksheet” on page 114

“Installation checklist” on page 116

Capacity planning

Planning details include determining how many servers that you want to monitor, how many agents and agent instances are required, and how much memory, and space is necessary for growth over time.

The following list provides planning guidelines so you can anticipate the growth of your system over time, depending on how many monitoring agents are in your environment:

- Each agent instance, whether it is an IBM Tivoli Monitoring agent, or a Tivoli Monitoring for Tivoli Storage Manager agent, requires approximately 150 MB of memory.
- Each agent also requires up to 15% processor resources during data collection.
- During a one-year period, the data *WAREHOUS* can grow to approximately 500 GB for each Tivoli Storage Manager server that is being monitored using the installation defaults. This value depends on the number of nodes that are being backed up and archived to that server, and the frequency that backups are occurring. Enabling pruning on the monitoring server can reduce the size of the *WAREHOUS* database by approximately 50 percent.

Related tasks:

“Configuring summarization and pruning settings” on page 126

Related reference:

“Installation worksheet”

“Installation checklist” on page 116

Installation worksheet

Use this worksheet to record information that you need when you install and administer Tivoli Monitoring for Tivoli Storage Manager. The worksheet includes several passwords for user accounts that are created during the installation. The worksheet is intended to help you remember the values that you chose after completing the installation.

Installing Tivoli Monitoring for Tivoli Storage Manager

Table 26. Tivoli Monitoring for Tivoli Storage Manager installation worksheet

Item	Description	Default value*	Your value
DB2 user IDs db2admin	Database administrator This is the Tivoli Data Warehouse user name and password. This user has permission to complete all the administrative tasks in DB2.	User name: db2admin Password: The password must meet the password complexity requirements of the operating system security policy.	
DB2 port	Default port number	The default port number is: 50000. Valid port numbers are 1024 - 65535.	
db2grp1	This is the group that the DB2 instance user ID belongs to.		
encryption key	A default encryption key is provided and the fields are prefilled with the default key. You can specify a different key, however, it is not necessary. The encryption key is used to establish a secure connection (using SSL protocol) between the Hub TEMS and the other components of the IBM Tivoli Monitoring environment. The encryption key must be the same for all of the agents accessing the Tivoli Enterprise Monitoring server.	IBMTivoliMonitoringEncryptionKey Must be exactly 32 characters in length. Valid characters are A-Z, a-z, 0-9, @, !, and #.	
sysadmin	Tivoli Enterprise Portal user name and password. This ID is automatically created during the installation and a password is required.	User name: sysadmin Password: The password must meet the password complexity requirements of the operating system security policy.	
ITMUser	Tivoli Data Warehouse user name and password. This user has access to read the information from the <i>WAREHOUS</i> database.	User name: ITMuser Password: The password must meet the password complexity requirements of the operating system security policy.	
DB2 home directory	Note: The DB2 home directory is not requested during installation. The DB2 directory is in the installation directory.		
Monitoring agent instance name	You can specify the name of the monitoring agent instance. If you intend to monitor more than one Tivoli Storage Manager server, you must have unique agent instance names for each instance. When specifying an instance name, the best practice is to specify the host name of the Tivoli Storage Manager server, or the server name from the QUERY STATUS command as your agent instance name. Instance names cannot exceed 20 characters. Note: The monitoring agent instances can be created and configured after the installation.	Your first agent instance name: Your second agent instance name: Your third agent instance name: More agent instance names...:	

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Table 26. Tivoli Monitoring for Tivoli Storage Manager installation worksheet (continued)

Item	Description	Default value*	Your value
Administration Center information	Ensure that you have the Administration Center installation information ready during the installation, such as the port number, fully qualified host name, and Tivoli Integrated Portal user ID and password.	The default port is 1500 Fully qualified host name: Tivoli Integrated Portal User name: Password:	
Location and the name of the SSL certificate	Needed when using the SSL feature instead of TCP IP.		
*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.			

Related tasks:

“Running the prerequisite checker” on page 118

“Installing using the installation wizard” on page 119

“Capacity planning” on page 114

Related reference:

“Installation checklist”

Installation checklist

This checklist summarizes the steps that are required to install and configure a system that can monitor Tivoli Storage Manager server and client data and produce reports. You can print out this checklist and use it as a guide to verify that all required steps are completed.

Table 27. Installation checklist

Step	Installation task or topic	Task description
1.____	Hardware and software requirements	Ensure that your system meets the system and hardware requirements.
2.____	Capacity planning	Review the capacity planning information to ensure that you adequately plan for growth.
3.____	Installation worksheet	Complete the installation worksheet to record password values and other installation information that you need.
4.____	Prerequisite checker	Optionally, run the prerequisite checker to ensure that your system meets all installation requirements.
5.____	Installation scenarios	Choose an installation scenario. The scenario you choose depends on the number of servers that you intend to monitor, and if there is an existing Tivoli Monitoring environment before this installation.

Installing Tivoli Monitoring for Tivoli Storage Manager

Table 27. Installation checklist (continued)

Step	Installation task or topic	Task description
6.____	Installing on Windows systems	<p>Run the Tivoli Monitoring for Tivoli Storage Manager installer.</p> <p>The following components are installed:</p> <ul style="list-style-type: none"> • DB2 • Tivoli Monitoring, which includes the following components: <ul style="list-style-type: none"> – Tivoli Enterprise Portal server – Tivoli Data Warehouse – Tivoli Enterprise Monitoring server – Summarization pruning agent – Warehouse proxy agent • Tivoli Monitoring for Tivoli Storage Manager agent <p>Note: If there is an existing Tivoli Monitoring environment, install only the monitoring agent.</p>
7.____	Installing monitoring agents	<p>Install or configure the monitoring agents to connect to the Tivoli Storage Manager server.</p> <p>If you plan to monitor five or less Tivoli Storage Manager servers, configure the monitoring agent that was installed on this system.</p> <p>Otherwise, install and configure only the monitoring agent on each Tivoli Storage Manager server to be monitored.</p> <p>Tip: Create 1 agent per Tivoli Storage Manager server instance.</p>
8.____	“Configuring historical data collection using the command-line interface on Windows systems” on page 139	Configure history configuration to allow data to be pruned from the <i>WAREHOUS</i> database.
9.____	Verifying the installation	Verify that the installation was complete and successful.
10.____	Chapter 19, “Installing and configuring the Administration Center,” on page 179	<p>Install Tivoli Common Reporting, which is selected as part of the Administration Center installation package.</p> <p>Important: The Administration Center and Tivoli Monitoring for Tivoli Storage Manager must be installed on the same system to use Tivoli Common Reporting.</p>

Table 27. Installation checklist (continued)

Step	Installation task or topic	Task description
Tips: <ol style="list-style-type: none">1. To view real-time Tivoli Storage Manager server activity, use Tivoli Enterprise Portal.2. To view historical reports, use Tivoli Common Reporting, which is part of the Administration Center.3. For additional help, see Tivoli Monitoring for Tivoli Storage Manager troubleshooting topics.		

Running the prerequisite checker

The installation prerequisite checker is an optional tool that verifies the operating system, the amount of free disk space for the installation, and other prerequisites.

To ensure that your system environment is appropriate for the installation, you can run the prerequisite checker before each installation.

Tip: The prerequisite checker verifies only the minimum memory that is necessary. More memory is required for additional tasks.

The prerequisite checker presents a summary of results at the end of the check. Any changes that are required in your environment before the installation are listed. Any new directories that are required for the installation are created.

To run the prerequisite checker, complete the following steps.

1. Ensure that the appropriate installation package is downloaded and that its files are extracted. A prerequisite checker is part of the installation package.
2. Choose the graphical interface (the default) or console method to start the installation, and follow the wizard instructions to complete the installation:
 - Issue this command to start the installation wizard using a graphical interface:
`prereqcheck.exe`

Or, double-click the `prereqcheck.exe` file.
 - Issue this command to start the installation wizard using the console method:
`prereqcheck.exe -i console`
3. Select the language for the prerequisite checker user interface.
4. In the welcome and disclaimer panels, review the statements and accept them.

If an error message is shown in the Prerequisite Results page, make the required corrections before continuing with the installation. The summary page lists the errors and directs you to an error log file.

Related tasks:

“Installing using the installation wizard” on page 119

Related reference:

“Installation checklist” on page 116

Installing using the installation wizard

You can install Tivoli Monitoring for Tivoli Storage Manager using the installation wizard.

Important preinstallation information:

- Packages can be downloaded from Passport Advantage or from the FTP site at <ftp://public.dhe.ibm.com/storage/tivoli-storage-management/maintenance/reporting/v6r3/LATEST>.
- Do not install on a system that already has a Tivoli Storage Manager server installed.
- Do not use a domain ID to install. The Windows user ID that you use when installing must be a local ID with administrator privileges, and cannot be a domain ID.
- Confirm that you have the required access privileges, including user IDs and passwords. See “Installation worksheet” on page 114.
- Extract the installation files to an empty directory. Do not extract to a directory that contains previously extracted files, or any other files.
- Ensure that there are no spaces, and no non-ASCII characters in the file name or path.
- Use short path names for the directory to avoid problems with the 255 character path limit on Windows systems. For example: C:\tsm_images.
- If you are installing into an existing Tivoli Monitoring environment, you must specify the existing Tivoli Monitoring instance directory. The default directory is C:\IBM.
- You cannot change the installation directory after you click **Next**. You must uninstall and begin again to change the installation directory.
- Do not alter the DB2 software that is installed with IBM Tivoli Monitoring for Tivoli Storage Manager installation packages and fix packs. Do not install or upgrade to a different version, release, or fix pack of DB2 software because doing so can damage the database. Tivoli Monitoring for Tivoli Storage Manager only can use components and versions that are installed as part of the Tivoli Monitoring for Tivoli Storage Manager installation.
- Print a copy of the installation worksheet, or refer to it during installation. The worksheet describes information that is needed during installation such as port, directories, user IDs, passwords, and more. For information about the parameters and the default values, see Installation worksheet.

Installation procedure:

1. Choose whether you want to install from the DVD, or a downloaded package file, and complete the following steps to begin the installation:

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Install from DVD media:	Install from downloaded package file:
<ol style="list-style-type: none"> 1. Change directories to the DVD drive, and click the install.exe file to begin the installation wizard. 	<ol style="list-style-type: none"> 1. Verify that the executable file is in the directory where you want the extracted files to be located, and that there is at least 5 GB of available space for the extracted files. Restrictions: <ol style="list-style-type: none"> a. Ensure that there are no spaces, and no non-ASCII characters in the file name or path. b. Use short path names for the directory to avoid problems with the 255 character path limit on Windows systems. For example: C:\tsm_images. 2. Double-click the name of the package file to extract the installation files. Tip: Extract the installation files to an empty directory. Do not extract to a directory that contains previously extracted files, or any other files. 3. Optionally, locate the prereqcheck.exe file, and run it to ensure that your system meets all requirements. See Running the installation prerequisite checker. 4. Double-click the install.exe file, and follow the wizard instructions to complete the installation.

2. Verify that the installation was successful, by opening the Manage Tivoli Enterprise Monitoring Services application, or the Tivoli Enterprise Portal.
 - If there are any errors during the installation, the summary page lists the errors and directs you to an error log file. If you accepted the default directory during installation, the log file can be found at: C:\IBM\logs.txt.
 - The logs.zip file contains all of installation log files for or all of the different components, and can be found at: *install_dir*/. For example, C:\IBM\logs.zip.
 - For additional help, see the information about Using the logs.zip file to resolve installation failures, in the *Problem Determination Guide*.

To begin collecting data, you must create and configure an agent instance. See “Creating and configuring the agent instance” on page 123.

To begin working with reports, you must install the Administration Center, including the Tivoli Common Reporting component. See Chapter 19, “Installing and configuring the Administration Center,” on page 179.

Related tasks:

“Running the prerequisite checker” on page 118

Chapter 19, “Installing and configuring the Administration Center,” on page 179

“Creating and configuring the agent instance” on page 123

Related reference:

“Installation checklist” on page 116

Verifying the installation

After you install Tivoli Monitoring for Tivoli Storage Manager, verify that all of the components are installed and configured correctly.

To verify that the installation was successful, complete these steps:

1. Verify that the **Tivoli Enterprise Portal server** version is 06.22.02.00:
 - a. Open the Manage Tivoli Enterprise Management Services application:
 - Click **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services**.
 - b. Verify that the version of **Tivoli Enterprise Portal server** is 06.22.02.00 in the **Version** column.
2. Verify that the **Monitoring Agent for Tivoli Storage Manager template** version is 06.34.00.00:
 - a. Open the Manage Tivoli Enterprise Management Services application as described in Step 1.a.
 - b. Verify that the version of the **Monitoring Agent for Tivoli Storage Manager template** is 06.34.00.00 in the **Version** column.
3. Verify database connectivity:
 - a. Log on to the Tivoli Enterprise Portal with your sysadmin user ID and password by using one of the following methods:
 - Click **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services** and select Tivoli Enterprise Portal under **Service/Application**. You can also double-click the Tivoli Enterprise Portal icon on your desktop.
 - Open a web browser and specify the address of the server where the Tivoli Enterprise Portal was installed, similar to the following example:
`http://hostname:1920///cnp/kdh/lib/cnp.html`
 where *hostname* is the server name and 1920///cnp/kdh/lib/cnp.html is the port and location of the Java Tivoli Enterprise Portal web Client.



Tip: Always use this port number and location.
 - b. Click the **Warehouse Proxy** node to highlight it in the **Navigator** pane.

Note: The **Warehouse Proxy** node can be found in the following location:

Enterprise > Windows System > *hostname* > Warehouse Proxy

 - c. In the **Database Information** table, verify that the **DB Connectivity** has a value of YES and that the **DB Version** has a value of 9.7.
 - d. Click the **Summarization and Pruning Agent** node to highlight it in the **Navigator** pane.
 - e. In the **Connectivity** table, verify that the **TEPS Connectivity** value and the **DB Connectivity** values are YES.
4. Verify that the history configuration is configured:
 - a. Log on to the Tivoli Enterprise Portal by following the steps in Step 3.a.
 - b. Click **Edit > History Configuration**.
 - c. Verify that there are several KSK_* attribute groups under the **Tivoli Storage Manager** node in the navigation pane.

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- d. In the content pane, under the **Group** column, verify that there are several groups with the  icon that precedes the name. The icon indicates that the attribute is running to summarize and store data.
5. If you completed a new installation, verify that pruning is configured:
 - a. Log on to the Tivoli Enterprise Portal by following the steps in Step 3.a.
 - b. Click **Edit > History Configuration**.
 - c. Click the **Tivoli Storage Manager** node to highlight it.
 - d. Click any of the attribute groups with the  icon, and view the **Pruning** section in the window. If configured, all the check boxes are selected and there are numerical values in the fields. For more information, see “Configuring summarization and pruning settings” on page 126.
6. Optional: If you configured the monitoring agent and installed the Administration Center, you can verify the configuration and begin working with the reports.
 - a. Log on to the Tivoli Enterprise Portal by following the steps in Step 3.a. with the *sysadmin* user ID and password and review the workspaces to verify that data is being collected.

Note: The workspaces can be found in the **Navigator** pane under the following node:

Enterprise > Windows System > *hostname* > Tivoli Storage Manager

If you created multiple instances of the agent, click each agent instance that is listed under the Tivoli Storage Manager branch in the **Navigator** panel. Each agent instance has its own list of workspaces. Review a few workspaces to verify that data is coming in from the Tivoli Storage Manager server.

You can also navigate to the **Agent Log** workspace and look for messages such as TSM login succeeded. If you see a message that indicates that the login failed, you probably specified an incorrect ID or password when you were configuring your agent instance. If data is not being collected, see the information about resolving problems with Tivoli Monitoring for Tivoli Storage Manager, in the *Problem Determination Guide*.

- b. Log on to the Administration Center:
 - 1) Open a web browser and enter the following address to start the Administration Center:
`https://hostname:port/ibm/console`

where *port* is the port number that is specified when you installed the Tivoli Integrated Portal. The default port is 16311. The *hostname* is the host name of the system where the Administration Center is installed.
 - 2) Enter the *tipadmin* user ID and password. The default user ID is *tipadmin*.
- c. Navigate to **Reporting > Common Reporting**. You can view Cognos® reports by selecting **IBM Tivoli Storage Manager Cognos Reports**. You can view BIRT reports by selecting **Tivoli Products**.

Note: You might need to wait one or two hours after configuration before you can see historical data in Tivoli Common Reporting.

If you experience issues with your installation such as data not displaying in your reports, or other issues, review the information in the *Problem Determination Guide* about resolving problems with Tivoli Monitoring for Tivoli Storage Manager.

For more information about reports, see the monitoring operations section in the *Administrator's Guide*.

Taking the first steps after installation

After you install Tivoli Monitoring for Tivoli Storage Manager, there are steps you must follow to complete your setup. After the setup is complete, you can start real-time monitoring of your Tivoli Storage Manager servers and start collecting historical data so you can run Tivoli Common Reporting reports.

Complete these two steps after the installation:

1. Create an agent instance for each Tivoli Storage Manager that you want to monitor.

You must create and configure a monitoring agent instance for each Tivoli Storage Manager server that you want to monitor. You can create up to 5 agent instances on the monitoring server. If you intend to monitor more than 5 Tivoli Storage Manager servers, you must use the installer to install only the Monitoring Agent directly on the additional Tivoli Storage Manager servers you want to monitor.

- See “Creating and configuring the agent instance on Windows systems” on page 124.

2. Install the Administration Center, including the Tivoli Common Reporting component. See Chapter 19, “Installing and configuring the Administration Center,” on page 179.

To run historical reports on the Tivoli Storage Manager servers that you create agent instances for, you must install the Tivoli Common Reporting component. The Administration Center must be installed on the same system as Tivoli Monitoring for Tivoli Storage Manager. If you installed the Administration Center without the Tivoli Common Reporting component, you must rerun the Administration Center installer to install the Tivoli Common Reporting component.

Related tasks:

Chapter 19, “Installing and configuring the Administration Center,” on page 179
“Creating and configuring the agent instance”

Related reference:

“Installation checklist” on page 116

Creating and configuring the agent instance

After you install Tivoli Monitoring for Tivoli Storage Manager, you must create and configure the agent instance to begin collecting data.

If your environment has less than five Tivoli Storage Manager servers, you can use the monitoring agent template that was installed as part of the Tivoli Monitoring for Tivoli Storage Manager installation to create and configure up to 5 agent instances.

Installing Tivoli Monitoring for Tivoli Storage Manager

If your environment has more than five Tivoli Storage Manager servers, you must install additional monitoring agents on each Tivoli Storage Manager servers that you want to monitor.

This configuration provides the most efficient use of memory on both the Tivoli Storage Manager server, and the IBM Tivoli Monitoring server.

Related tasks:

“Creating and configuring the agent instance on Windows systems”

“Verifying the installation” on page 121

Related reference:

“Installation checklist” on page 116

Creating and configuring the agent instance on Windows systems

After installing the agent, you must create and configure an agent instance for each Tivoli Storage Manager server that you intend to monitor.

You can monitor approximately five Tivoli Storage Manager servers from the same IBM Tivoli Monitoring server, but you must create and configure an agent instance for each server that you want to monitor. If you plan to monitor more than five servers, you should install additional monitoring agents on each of your Tivoli Storage Manager servers.

To configure the Tivoli Monitoring for Tivoli Storage Manager agent instance, complete the following steps:

1. Click **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services**.
2. In the Manage Tivoli Enterprise Monitoring Services window, double-click **Monitoring Agent for Tivoli Storage Manager template**.
3. Specify the instance name and click **OK**. For example, SERVER1.

Tip: When specifying an instance name, the best practice is to include the host name of the Tivoli Storage Manager server. You can find the server name by issuing the **QUERY STATUS** command. Instance names must be unique, and cannot exceed 20 characters.

4. 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.

Tip: For normal TCP/IP traffic, you can determine the port number by issuing one of the following commands:

```
QUERY OPT TCPPORT
```

```
QUERY OPT TCPADMINPORT
```

For SSL encrypted TCP/IP traffic, you can determine the port number by issuing one of the following commands:

```
QUERY OPT SSLTCPPOINT
```

```
QUERY OPT SSLTCPADMINPORT
```

- c. In the **TSM Administrator** field, enter the Tivoli Storage Manager administrator ID that is used to access the Tivoli Storage Manager server.

Note: The IBM Tivoli Monitoring agent runs only queries on the Tivoli Storage Manager server and does not change anything. The administrator that you choose to run the queries can be an administrator ID without the following privileges:

- System Privileges
 - Policy Privileges
 - Storage Privileges
 - Operator Privileges
 - Client Access Privileges
 - Client Owner Privileges
- d. In the **TSM Administrator Password** field, enter the password twice for the Tivoli Storage Manager system administrator ID.
 - e. In the **File System Location and Name of SSL Certificate** field, either browse to the location where the SSL certificates are located, or leave the field blank if you do not intend to use SSL to encrypt network traffic from the agent to the Tivoli Storage Manager server

Notes: If you intend to use SSL to encrypt network traffic, ensure that your Tivoli Storage Manager server is enabled for this type of secure communication and that you specified the correct port number. For more information, see *Configuring Tivoli Storage Manager client/server communication with Secure Sockets Layer*.

- f. Click **OK** to save the settings.
5. The Manage Tivoli Enterprise Monitoring Services page displays the new Tivoli Monitoring for Tivoli Storage Manager agent instance.
6. To start the Tivoli Monitoring for Tivoli Storage Manager agent instance, right-click the agent instance in the list, and select **Start**.

Tip: If the agent was installed separately on an existing IBM Tivoli Monitoring server, you might need to stop and restart the Tivoli Enterprise Portal server to allow it to pick up and apply the new agent configuration settings. From the Manage Tivoli Monitoring Services window, select the Tivoli Enterprise Portal server, right-click, and select **Stop**. Wait for it to stop, and then right-click and select **Start**.

Related tasks:

“Verifying the installation” on page 121

Related reference:

“Installation checklist” on page 116

Manually configuring agents and services

After you install Tivoli Monitoring for Tivoli Storage Manager, you can manually configure the IBM Tivoli Monitoring agents and the data source if necessary.

Configuring summarization and pruning settings

After you install Tivoli Monitoring for Tivoli Storage Manager, you can configure summarization and pruning settings on the WAREHOUS database.

The summarization and pruning settings control how often data is collected and pruned from the WAREHOUS database. The values are set independently for each attribute group. The attribute groups correspond to a workspace in the Tivoli Enterprise Portal. The summarized data is stored in the WAREHOUS database for Tivoli Common Reporting reports to use. When the summarized data is periodically pruned, the data is removed from the WAREHOUS database.

Summarization values are automatically configured during installation. Pruning values are configured only during new installations. If you upgraded the application, you must manually configure the pruning settings. Pruning can help reduce the amount of data that is stored in the database, in some cases by as much as 50%. Pruning can also help with performance issues if the database becomes too large. You can adjust the values so that they are appropriate for your organization.

Note: DB2 allocates space for the database size to increase. Pruning reduces the amount of data that is stored in the database. To reduce the size of the database, go to the DB2 information center: <http://pic.dhe.ibm.com/infocenter/db2luw/v9r7/index.jsp> and search for *reducing databases*.

To configure summarization and pruning settings, complete the following steps:

1. Log on to the Tivoli Enterprise Portal by using the sysadmin ID and password.
2. From the main menu, click **Edit > History Configuration > Tivoli Storage Manager**.
3. In the Select Attribute Groups pane, highlight the rows that contain the groups that you want to modify. The summarization and pruning fields below the table become active.
4. Select the summarization and pruning values that you want to modify, specify how long you want to keep the data, and click **OK**.

The following table shows one example of a modified pruning setup. Your settings can vary depending on the data that you collect, how often you collect it, how long you keep it, and how often you prune it.

Table 28. Default pruning setup

Summarization value	Pruning value	Numeric value	Time units
Yearly	Yearly	7	Years
Quarterly	Quarterly	2	Years
Monthly	Monthly	2	Years
Weekly	Weekly	6	Months
Daily	Daily	2	Months
Hourly	Hourly	2	Weeks
	Detailed data	3	Months

As a best practice, start with the default settings, and test your system to ensure that data is being collected. When you are satisfied that the data is being collected correctly, you can adjust the collection interval and pruning values to suit the needs of your organization. Be sure to allow sufficient time to elapse before expecting data to display in reports. Data is displayed in the reports that are based upon the intervals that you choose.

You cannot run a report on data that has been removed through pruning.

Manually configuring the Tivoli Enterprise Portal server

When Tivoli Monitoring for Tivoli Storage Manager is installed, a script is run to configure the Tivoli Enterprise Portal server. You can verify that the service is configured correctly, or you can manually reconfigure this service if necessary.

1. Log on to the Manage Tivoli Enterprise Monitoring Services application:
 - Click **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services**.
2. From the Manage Tivoli Enterprise Monitoring Services window, select **Tivoli Enterprise Portal Server**, right-click, and select **Reconfigure**.
3. Click **OK** in the TEP Server Configuration window to accept the defaults and continue.
4. Verify that the host name and port numbers specify where the Tivoli Enterprise Monitoring server is located, and click **OK**. Click **Yes**.
5. Click **OK** in the Warehouse Proxy Database Selection window to accept **DB2** as the default database type, and click **OK** to continue.

Restriction: There are other choices that are listed, but DB2 is the database that is required for Tivoli Monitoring for Tivoli Storage Manager.

6. Verify that the following fields are correct:
 - **Data Source Name:** ITM Warehouse
 - **Database Name:** WAREHOUS
 - **Admin User ID:** db2admin
 - **Database User ID:** ITMUser
7. Remove, and retype the password in the **Database Password** field and the **Admin Password** field.
8. Click **OK**.

Note: The message Successfully configured warehouse data source displays. If you do not receive this message, there is at least one empty field or an error in configuring the service.

Tip: There is no check for valid passwords, therefore it is important to retype the passwords correctly.

9. Click **Yes** to complete the configuration process.
10. From the Manage Tivoli Enterprise Monitoring Services window, select **Tivoli Enterprise Portal Server**, right-click, and select **Start**.

Manually configuring the Warehouse Proxy agent on Windows

When Tivoli Monitoring for Tivoli Storage Manager is installed, a script is run to configure the Warehouse Proxy agent. Sometimes you might need to verify that the agent is configured correctly, or manually reconfigure the agent if necessary.

1. Log on to the Manage Tivoli Enterprise Monitoring Services application by clicking **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services**.
2. From the Manage Tivoli Enterprise Monitoring Services window, select **Warehouse Proxy**, right-click, and select **Reconfigure**.
3. Click **OK** to the message that says When configuring the Warehouse Proxy, remember that it must connect to a HUB TEMS (not a remote TEMS).
4. Ensure that the **Primary TEMS connection** field indicates **IP.PIPE**.
5. Verify that the host name and port numbers specify where the Tivoli Enterprise Monitoring server is located, and click **OK**. Click **Yes**.
6. Click **OK** in the Warehouse Proxy Database Selection window to accept **DB2** as the default database type, and click **OK** to continue.

Restriction: There are other choices that are listed, but DB2 is the database that is required for Tivoli Monitoring for Tivoli Storage Manager.

7. Verify that the following fields are correct:
 - **Data Source Name:** ITM Warehouse
 - **Database Name:** WAREHOUS
 - **Admin User ID:** db2admin
 - **Database User ID:** ITMUser
8. Remove, and retype the password in the **Database Password** field and the **Admin Password** field.
9. Click **OK**.

Note: The message Successfully configured warehouse data source displays. If you do not receive this message, there is at least one empty field or an error in configuring the service.

Tip: There is no check for valid passwords, therefore it is important to retype the passwords correctly.

10. Click **Yes** to complete the configuration process.
11. From the Manage Tivoli Enterprise Monitoring Services window, select **Warehouse Proxy**, right-click, and select **Start**.

Manually configuring the Warehouse Summarization and Pruning agent

When Tivoli Monitoring for Tivoli Storage Manager is installed, a script is run to configure the Warehouse Summarization and Pruning agent. Sometimes you might need to verify that the agent is configured correctly, or manually reconfigure this agent if necessary.

1. Log on to the Manage Tivoli Enterprise Monitoring Services application:
 - Click **Start > All Programs > IBM Tivoli Monitoring > Manage Tivoli Monitoring Services**.
2. From the Manage Tivoli Enterprise Monitoring Services window, select **Warehouse Summarization and Pruning Agent**, right-click, and select **Reconfigure**.

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

3. Ensure that the **primary TEMS connection** field indicates **IP.PIPE**.
4. Verify that the host name and port numbers specify where the Tivoli Enterprise Monitoring server is located, and click **OK**. Click **Yes**.
5. Click the **Sources** tab and ensure that the following values are correctly specified, and click **Save**:
 - **JDBC Drivers:**
 - C:\IBM\db2\java\db2jcc.jar
 - C:\IBM\db2\java\db2jcc_license_cu.jar
 - **Database:** DB2
 - In the **Warehouse URL** field, ensure that the following information is correct:
 - The URL should be similar to this example: jdbc:db2://myserver:50000/WAREHOUS
 - The *myserver* variable can be the IP address or host name of the system. You can also use localhost.
 - The default DB2 port number is 50000
 - Ensure that the default Tivoli Warehouse database name WAREHOUS is appended to the end of the Warehouse URL.
 - **Warehouse Driver:** com.ibm.db2.jcc.DB2Driver
 - **Warehouse Password:** my_password Specify the password that you entered for Tivoli Data Warehouse during the IBM Tivoli Monitoring installation.
 - Click **Test database connection** to test the connection.
 - In the **TEP Server Host** field, accept the default localhost.
 - In the **TEP Server Port** field, accept 1920 as the default server port or enter a different port number.
6. Click **Save** and then click **Close** to close the Configure Summarization and Pruning Agent window.
7. From the Manage Tivoli Enterprise Monitoring Services window, select **Warehouse Summarization and Pruning Agent**, right-click, and select **Start**.

Configuring a data source by using the configuration wizard

A data source is automatically configured during the Tivoli Monitoring for Tivoli Storage Manager installation. The data source must be configured correctly to allow the Administration Center to connect to the WAREHOUS database and generate reports.

The data source defines the connection to the WAREHOUS database. It is automatically configured during installation, but you can use the data source configuration wizard to reconfigure the data source if necessary.

To configure a data source by using the configuration wizard, complete these steps:

1. Locate the data configuration wizard executable file, which is named datasrc. If you installed Tivoli Monitoring for Tivoli Storage Manager in the default directory, the executable file can be found in this directory:
C:\IBM\datasrc.exe
2. Start the configuration wizard and follow the instructions to specify the DB2 host name, port, user ID, and password. You must also specify the Tivoli Integrated Portal user ID and password that was defined when you installed the Administration Center.

Installing monitoring agents

You can install monitoring agents on any remote Tivoli Storage Manager server that you want to monitor.

The Tivoli Monitoring for Tivoli Storage Manager agent gathers data from each Tivoli Storage Manager server, and sends it to the Tivoli Monitoring server.

Before deciding whether you need to install the monitoring agent directly on your Tivoli Storage Manager server, consider the following items:

- The monitoring server can handle up to five monitoring agents. For more agents, you must install a monitoring agent directly on each of the Tivoli Storage Manager servers that you want to monitor.
- If you create and configure a single agent instance on the Tivoli Storage Manager server, instead of the monitoring server, you can help avoid an increase in memory requirements on the monitoring server.
- Review the requirements for the operating systems that the monitoring agent installation is supported on. See “System requirements for Tivoli Monitoring for Tivoli Storage Manager” on page 111.

Restrictions:

1. To use the agent in an existing Tivoli Monitoring environment, you must install the agent on the existing Tivoli Enterprise Monitoring server.
2. If you plan to monitor a Tivoli Storage Manager server in a different timezone than the monitoring server, install the monitoring agent on the Tivoli Storage Manager server.
3. The monitoring agent is not supported on Solaris, HP, and Linux ppc64.

Related tasks:

“Installing monitoring agents on Tivoli Storage Manager servers”

“Installing and deploying monitoring agents in an existing Tivoli Monitoring environment” on page 131

“Remotely deploying monitoring agents” on page 133

Related reference:

“System requirements for Tivoli Monitoring for Tivoli Storage Manager” on page 111

“Remote deployment preinstallation requirements” on page 134

Installing monitoring agents on Tivoli Storage Manager servers

You can install a Tivoli Monitoring for Tivoli Storage Manager agent on any supported Tivoli Storage Manager server that you want to monitor.

Important: Do not use a domain ID to install or configure agents. The Windows user ID that you use when installing must be a local ID with Administrator privileges, and cannot be a domain ID.

To install the Tivoli Monitoring for Tivoli Storage Manager agent on the Tivoli Storage Manager server, complete these steps:

1. Start the installation wizard from the DVD or package file.
2. Accept the license agreement and click **Next**.

3. On the **Component Selection** page, select **Tivoli Monitoring for Tivoli Storage Manager agent**, and click **Next**.
4. Follow the wizard instructions to specify the installation location and encryption key.

Requirements:

- a. If you are installing into an existing IBM Tivoli Monitoring environment, you must choose the same directory where IBM Tivoli Monitoring is installed. For example, if you installed IBM Tivoli Monitoring in the /opt/IBM/ITM directory, you must specify /opt/IBM/ITM as the destination folder for this installation.
 - b. All agents must use the same encryption key that was specified during installation of the monitoring server. The default encryption key is: `IBMTivoliMonitoringEncryptionKey`.
5. Review the installation summary page and click **Next** to start the installation. At the end of the installation, the installation results are displayed. If there were any errors during the installation, the summary lists the errors and directs you to an error log file.
 6. Click **Finish**.

After you install the agent, create and configure the agent instance. See [Creating and configuring the agent instance](#).

Installing and deploying monitoring agents in an existing Tivoli Monitoring environment

Remotely deploying monitoring agents is intended only for users who purchased IBM Tivoli Monitoring separately from Tivoli Storage Manager, and who are already running a Tivoli Monitoring server. By remotely deploying monitoring agents, you can monitor Tivoli Storage Manager servers with the existing Tivoli Monitoring server.

The operating system agent that is required for remote deployment is not included in the version of IBM Tivoli Monitoring that is embedded in Tivoli Monitoring for Tivoli Storage Manager. Therefore, you cannot use remote deployment without purchasing IBM Tivoli Monitoring.

Installing monitoring agents or application support files in an existing IBM Tivoli Monitoring environment on a Windows system

If you have an existing IBM Tivoli Monitoring system that does not have Tivoli Monitoring for Tivoli Storage Manager installed, you can run the native IBM Tivoli Monitoring installation wizard to install more monitoring agents. If you do not want to install an agent, you can install only the application support files. These files are required by the Tivoli Enterprise Monitoring server and Tivoli Enterprise Portal server to monitor Tivoli Storage Manager servers.

Installing Tivoli Monitoring for Tivoli Storage Manager

Restrictions to know before you begin:

- These procedures are for experienced IBM Tivoli Monitoring users only, and are not intended for novice Tivoli Monitoring for Tivoli Storage Manager users.
- Do not install this option if you have previously installed Tivoli Monitoring for Tivoli Storage Manager. Doing so can interfere with future uninstallations or upgrades of Tivoli Monitoring for Tivoli Storage Manager.
- Do not use a domain ID to install or configure agents. The Windows user ID that you use during installation must be a local ID with Administrator privileges, and cannot be a domain ID.
- You must use Tivoli Monitoring for Tivoli Storage Manager only with IBM Tivoli Monitoring, version 6.2.2 FP2 or later. See the system requirements for your platform for more requirements.
- Ensure that you meet all system requirements.

To install the monitoring agent in to an existing Tivoli Monitoring environment, complete the following steps:

1. Download the appropriate executable file from Passport Advantage, or the FTP download site at <ftp://public.dhe.ibm.com/storage/tivoli-storage-management/maintenance/reporting/v6r3/LATEST>. The file name for installing only the monitoring agent, or only the application support files, can be recognized by the word **AGENT** in capital letters. For example:
6.3.3.000-TIV-TSMRPT-AGENT-Windows.exe
2. Stop all of the agents and services that are running on the system. From the Manage Tivoli Enterprise Monitoring Services application, select all of the following services and select **Stop**:
 - Tivoli Monitoring for Tivoli Storage Manager. If there are multiple agents, stop them all.
 - Tivoli Enterprise Monitoring server
 - Tivoli Enterprise Portal server
 - Warehouse summarization and pruning agent
 - Warehouse proxy agent
 - IBM Eclipse help server
3. Choose whether you want to install from the DVD media, or a package file that is downloaded:

Installing from DVD media:	Installing from downloaded package file:
Insert the DVD, navigate to the top-level directory, and double-click the following command to start the installation: small_agent_install.bat	Navigate to the \WINDOWS subdirectory, and double-click the setup.exe file to start the installation.

4. Click **Next** on the welcome page.
5. Accept the license agreement and click **Next**.
6. Follow the wizard instructions to accept the installation location and encryption key.
7. Choose whether to install the monitoring agent or only the application support files:
 - To install the monitoring agent, expand all of the collapsed sections, ensure that all check boxes are selected, and click **Next**.

- To install only the application support files, expand all of the collapsed sections and ensure that only the following items are selected:
 - Tivoli Enterprise Monitoring server - TEMS
 - Monitoring Agent for Tivoli Storage Manager
 - Tivoli Enterprise Portal server - TEPS
 - Monitoring Agent for Tivoli Storage Manager
 - Tivoli Storage Manager
 - Monitoring Agent for Tivoli Storage Manager
- 8. Accept the defaults to complete the installation and click **Finish**.
- 9. After the installation is complete, the Manage Tivoli Enterprise Monitoring Services window opens. To ensure that the new settings are applied, select **Tivoli Enterprise Portal server**, right-click, and select **Reconfigure**. Follow the wizard prompts and accept all defaults.
- 10. Select **Tivoli Enterprise Portal server**, right-click, and select **Start**.

After you complete the installation, must configure Tivoli Enterprise Portal to collect and retain historical data for reports. See “Configuring historical data collection using the command-line interface on Windows systems” on page 139.

You can also create and configure the agent instance if needed, see “Creating and configuring the agent instance” on page 123.

Remotely deploying monitoring agents

Remote deployment provides the ability to add the monitoring agent installation packages to a central location called an *agent depot*. From this central location, the packages can then be pushed out to remote locations and installed silently by using the IBM Tivoli Monitoring operating system agent. Remote deployment is useful for larger-scale deployments such as deploying five or more monitoring agents.

Remote deployment can be used to deploy monitoring agents to systems that already have the IBM Tivoli Monitoring operating system agent that is installed on them. Remote deployment can be used for new installations or to upgrade existing monitoring agents to new versions.

There are multiple tasks that must be completed to use remote deployment. These tasks include the following items:

- Add the agents that you want to deploy to the agent depot on the Tivoli Enterprise Monitoring server hub.

Requirement: The IBM Tivoli Monitoring operating system agents on the systems that you want to deploy to must be configured to use this Tivoli Enterprise Monitoring server hub.

- Initiate the remote deployment.
- Configure historical data collection.

Installing Tivoli Monitoring for Tivoli Storage Manager

Remote deployment preinstallation requirements:

Before you begin any remote deployment tasks, ensure that you meet the preinstallation requirements for your system.

Remote deployment prerequisites include the following tasks:

1. Install IBM Tivoli Monitoring and configure the Tivoli Enterprise Monitoring server hub.
2. Install the IBM Tivoli Monitoring 6.2.2 operating system agent on each system that you want to remotely deploy a monitoring agent to, and configure it to point to the Tivoli Enterprise Monitoring server.
3. You must also install the IBM Tivoli Monitoring application support files and configure the Tivoli Enterprise Monitoring server hub. These steps can be completed before or after any remote deployment tasks, but are required to view data in historical reports.

You can verify whether these prerequisites are met by logging in to Tivoli Enterprise Portal, selecting the systems that you want to deploy to, and verifying that the operating system agent is displaying information. For example, select the **Memory** workspace in Tivoli Enterprise Portal, and verify that data is displayed.

If you must install the IBM Tivoli Monitoring operating system agent to the agent depot, the easiest method is to copy the agent to the agent depot by issuing the `tacmd addbundles` command, and then install it by issuing the `tacmd createNode` command. For example:

- Extract the Tivoli Monitoring 6.2.2 operating system agent, then copy the operating system agent to the depot by issuing the following command:
`tacmd addbundles -i /path_to_agent/WINDOWS/Deploy`
- Deploy the operating system agent by issuing the following command:
`tacmd createNode -h host_name -u user_name -w password`

If you are installing the monitoring agent to a 64-bit Windows system, the IBM Tivoli Monitoring 32-bit and 64-bit compatibility package from the base IBM Tivoli Monitoring 6.2.2 FP2, or later is required.

Populating the agent depot on Windows systems:

Before you can remotely deploy a monitoring agent, you must first populate the agent depot. The agent depot is an installation directory on the monitoring server where you must copy the agent to before you can deploy it to remote systems.

Before you begin, ensure that you have met all of the remote deployment preinstallation requirements.

Complete these steps to populate the agent depot for remote deployment:

1. Copy and extract the agent installation package to a directory that is accessible by the Tivoli Enterprise Monitoring server hub. For example, you can copy the package to the following directory:
`C:\tmp\tsmrptagent`

Tip: Ensure that you select the appropriate executable file from the Passport Advantage, FTP download site, or from the DVD media. The file name for installing only the monitoring agent, or the application support files can be identified by the word AGENT, in capital letters. For example:

Installing Tivoli Monitoring for Tivoli Storage Manager

6.3.3.000-TIV-TSMRPT-AGENT-Windows.exe

2. Optional: Modify the silent response file that will be used during the agent installation to specify items such as the installation directory and the encryption key that is required to communicate with the Tivoli Enterprise Monitoring server hub.

Tips:

- a. The default encryption key value is IBMTivoliMonitoringEncryptionKey
 - b. The silent response directory and filename is WINDOWS\Deploy\SK_Silent_Install.txt
3. Add the agent to the agent depot. This process copies the files from the installation media to a directory on the Tivoli Enterprise Monitoring server hub. This can be accomplished by using one of the following methods:

Table 29. Populating the agent depot methods

GUI installation method	CLI installation method
<p>You can use the GUI installation method using the following steps:</p> <ol style="list-style-type: none"> 1. Double-click the setup.exe file in the \WINDOWS\ subdirectory to start the installation wizard. 2. In the panel where you select the agents to configure for remote deployment, select the Monitoring Agent for Tivoli Storage Manager checkbox. 	<p>You can use the tacmd addBundles command using the following steps:</p> <ol style="list-style-type: none"> 1. Change directories to the location where the tacmd command is located. For example, the default is: C:\IBM\ITM\BIN 2. Login to Tivoli Enterprise Monitoring server by issuing the following command: tacmd login -s <i>host_name</i> -u sysadmin -p <i>password</i> 3. Add the agent to the agent depot by issuing the following command: tacmd addbundles -p WINNT -i C:\path_to_agent\WINDOWS\Deploy <p>If the command was successful, the following message is displayed:</p> <p>KUICAB022I: The following bundles were successfully added to the C:\IBM\ITM\CMS\depot\ depot:</p> <p>Product Code : SK Deployable : True Version : 063300000 Description : Monitoring Agent for Tivoli Storage Manager Host Type : WINNT Host Version : WINNT Prerequisites:</p> <p>Tip: For usage information about the addbundles command you can issue the following command: tacmd help addBundles</p>

4. Verify that the bundles exist in the agent depot by navigating to the C:\IBM\ITM\CMS\depot directory. Look for **Monitoring Agent for Tivoli Storage Manager**, or issue the following command:

```
tacmd viewdepot -t sk
```

Tip: You can limit the output to only the Tivoli Monitoring for Tivoli Storage Manager monitoring agent by using the SK product code. For example:

Installing Tivoli Monitoring for Tivoli Storage Manager

```
Product Code : SK
Version      : 063300000
Description  : Monitoring Agent for Tivoli Storage Manager
Host Type    : WINNT
Host Version : WINNT
Prerequisites:
```

Tip: You can remove older bundles if they are no longer needed by issuing the `tacmd removebundles` command. For example:

```
tacmd removebundles -t sk -i C:\TSM-633\WINDOWS\Deploy
```

After you have populated the agent depot with the monitoring agent, you can deploy the agent to remote sites from this central location. For detailed procedures see *Remotely deploying monitoring agents*.

Related reference:

“System requirements for Tivoli Monitoring for Tivoli Storage Manager” on page 111

“Remote deployment preinstallation requirements” on page 134

Remotely deploying monitoring agents on Windows systems:

After you populated the agent depot, you can deploy the monitoring agent to remote systems.

Before you begin, ensure that your system meets all of the remote deployment preinstallation requirements, and that the operating system agent on the remote system is started and has Administrator access.

Complete these steps to install the monitoring agent, and initiate the deployment:

1. Navigate to where the `tacmd` command is located. For example, the default directory is:
`C:\IBM\ITM\BIN`
2. Log in to the remote system using the `sysadmin` user ID and password:
`tacmd login -s host_name -u sysadmin -p password`
3. Locate the nodes that you want to deploy the monitoring agent to, by issuing the following command:
`tacmd listSystems -t NT`

4. Deploy the monitoring agent by issuing the following command:

```
tacmd addSystem -t sk -n Primary:yourhost:NT -p INSTANCE=yourhost
TSM_AUTHENTICATION_INFORMATION.KSK_SERVER_ADDR=yourhost.yourcompany.com
TSM_AUTHENTICATION_INFORMATION.KSK_PORT_NUMBER=1500
TSM_AUTHENTICATION_INFORMATION.KSK_USER=tsmusername
TSM_AUTHENTICATION_INFORMATION.KSK_PASSWORD=tsmpassword
```

where:

- `TSM_AUTHENTICATION_INFORMATION.KSK_SERVER_ADDR` indicates the server IP address of the Tivoli Storage Manager server.
- `TSM_AUTHENTICATION_INFORMATION.KSK_PORT_NUMBER` indicates the port that is required to access the Tivoli Storage Manager server.
- `TSM_AUTHENTICATION_INFORMATION.KSK_USER` indicates the user ID that is used to access the Tivoli Storage Manager server.
- `TSM_AUTHENTICATION_INFORMATION.KSK_PASSWORD` indicates the password for the user ID that is used to access the Tivoli Storage Manager server.

Installing Tivoli Monitoring for Tivoli Storage Manager

- TSM_AUTHENTICATION_INFORMATION.KSK_KEYSTORE indicates the file system location if the agent will be communicating with the Tivoli Storage Manager server through an SSL connection. Leave this blank to use the default non-SSL authentication method.
-

If your agent will be communicating with server through an SSL connection, specify a value by using the TSM_AUTHENTICATION_INFORMATION.KSK_KEYSTORE option.

Tip: When specifying a monitoring agent instance name, as a best practice, you can specify the name of the Tivoli(r) Storage Manager server, or the host name of the server as your instance name.

For example:

```
tacmd addSystem -t sk -n Primary:yourhost:NT -p INSTANCE=yourhost
TSM_AUTHENTICATION_INFORMATION.KSK_SERVER_ADDR=yourhost.yourcompany.com
TSM_AUTHENTICATION_INFORMATION.KSK_PORT_NUMBER=1500
TSM_AUTHENTICATION_INFORMATION.KSK_USER=tsmusername
TSM_AUTHENTICATION_INFORMATION.KSK_PASSWORD=tsmpassword
```

KUICAR010I: The agent type SK is being deployed.

KUICAR028I: The operation has been successfully queued for deployment, the transaction id is 1329702031328000000000041, use the getDeployStatus CLI to view the status.

5. Review the deployment status by issuing the following command:

```
tacmd getDeployStatus -t sk
```

For example:

```
Transaction ID : 1329702031328000000000041
Command       : INSTALL
Status        : INPROGRESS
Retries       : 0
TEMS Name     : HUB_HOST
Target Hostname: yourhost:NT
Platform      : WINNT
Product       : SK
Version       : 063300000
Error Message  : KDY0033I: Request is being processed. The deployment
status can be viewed using tacmd getDeployStatus to query the state
of request.
```

After you deployed the agent, verify that the Tivoli Storage Manager data is being collected and displayed in Tivoli Enterprise Portal. Log in to Tivoli Enterprise Portal, select the system that the monitoring agent was deployed to, and verify that data is displayed correctly in the workspaces.

Related tasks:

“Configuring historical data collection using the command-line interface on Windows systems” on page 139

“Configuring historical data collection from within Tivoli Enterprise Portal” on page 138

Related reference:

“Remote deployment preinstallation requirements” on page 134

Installing Tivoli Monitoring for Tivoli Storage Manager

Configuring historical data collection from within Tivoli Enterprise Portal:

After installing monitoring agents in to an existing IBM Tivoli Monitoring environment, you must configure historical data collection if you intend to generate reports based on this data. You can configure historical data collection from within Tivoli Enterprise Portal, but consider using the command-line interface instead because it is quicker than doing it from within Tivoli Enterprise Portal.

If you installed Tivoli Monitoring for Tivoli Storage Manager using the standard installation method, historical data collection was configured for you automatically. If you are using the native IBM Tivoli Monitoring installer, then you must manually configure historical data collection.

You must configure history configuration to have the data from the monitored servers stored in the *WAREHOUS* database. This is a requirement if you plan to use the Administration Center to view historical reports.

You can use the following steps to start data collection. In the steps, example values are used. Your selections depend on your criteria.


1. Start the Tivoli Enterprise Portal:
 - a. Click **Start > Programs > IBM Tivoli Monitoring > Tivoli Enterprise Portal**. Alternatively, click the Tivoli Enterprise Portal icon on the desktop.
2. Log on to the Tivoli Enterprise Portal by using the sysadmin user ID, and the password that was specified during installation.
3. From the Tivoli Enterprise Portal menu, click **Edit > History Configuration**.
4. Specify collection settings by completing the following steps for each of the following attribute groups:
 - KSK CLIENT NODE STORAGE
 - KSK CLIENT MISSED FILES
 - KSK CLIENT NODE STATUS
 - KSK DATABASE
 - KSK SCHEDULE
 - KSK STORAGE POOL
 - KSK TAPE USAGE
 - KSK TAPE VOLUME
 - KSK NODE ACTIVITY
 - KSK SERVER
 - KSK STORAGE DEVICE
 - KSK ACTIVITY LOG
 - KSK OCCUPANCY
 - KSK REPLSTATUS (Listed as Replication Status)
 - KSK REPLDETAILS (Listed as Replication Details)
 - KSK ACTIVITY SUMMARY

Tip: KSK denotes the Tivoli Monitoring for Tivoli Storage Manager product code.

- a. Right-click Tivoli Storage Manager, and select **Create new collection setting**.
- b. Select the attribute group from the menu.
- c. Specify a name for the new collection setting, and optionally provide a description. As a best practice, include the attribute group in the name.

- d. In the **Collection interval** field, set the value to 1 hour. This value specifies how often the data is retrieved from the monitoring agent.
- e. In the **Collection location** field, select **Tivoli Enterprise Monitoring server, TEMA**. This server is where the historical data files are stored.
- f. In the **Warehouse interval** field, select **1 day** for how often you want the warehouse data to store data. If you select 1 day, you cannot view reports for at least a day.

Note: These settings are examples. Your selections depend on how often, and how much data you want to collect. To test the data that is collected, start with a short interval such as 1 hour. After you are sure that the data is being collected correctly, you can adjust the collection interval to every 12 or 24 hours.

To verify that historical collection is activated, you can look for the **History Configuration**  icon next to each attribute group.

5. After the historical data collection settings are configured, complete the following steps to configure summarization and pruning of the data in the Tivoli Data Warehouse.

Tip: Summarization combines multiple data points into a single data point across a date range such as a monthly or quarterly. Pruning removes older data that is no longer needed to save database space.

- a. Left-click on **Tivoli Storage Manager** to open the summarization and pruning settings window.
- b. Select all of the attributes that are configured for historical data collection. A blue icon next to the attribute group indicates that data collection is running.
- c. In the summarization settings, enable summarization for Yearly, Quarterly, Monthly, Weekly, Daily, and Hourly.
- d. In the Pruning section, you can also optionally enable pruning. By default no pruning is enabled. If your Tivoli Data Warehouse database size is growing too large, pruning older data can be enabled here for each attribute group.

Note: Pruning too vigorously can result in no data, or not enough data being displayed in the Tivoli Common Reporting reports.

Configuring historical data collection using the command-line interface on Windows systems:

After installing monitoring agents in an existing IBM Tivoli Monitoring environment, you must configure historical data collection if you intend to generate reports based on this data.

If you installed Tivoli Monitoring for Tivoli Storage Manager using the standard installation method, historical data collection was configured for you automatically. If you are using the native IBM Tivoli Monitoring installer, then you must manually configure historical data collection.

You can also configure historical data collection from within the Tivoli Enterprise Portal. However, it is much quicker using the command-line interface because there are many attribute groups that must be configured.

Installing Tivoli Monitoring for Tivoli Storage Manager

Historical data is collected in the Tivoli Enterprise Portal, and is eventually displayed in historical reports. You must configure history configuration to have the data from the monitored servers stored in the *WAREHOU* database. This is a requirement if you plan to use the Administration Center to view historical reports.

The following commands can be copied and pasted into a command prompt on Windows. Modify any of the variables such as the password, to match your installation environment before pasting them.

1. Specify your user ID and password by issuing the following command in a command prompt window:

```
SET itmuser=sysadmin
SET password=your_password
SET CANDLE_HOME=C:\IBM\ITM
```

2. Paste the following text in the same command prompt window.

Tip: Remember to change the user ID and password variables to match the values you specified during installation.

```
SET warehouseinterval=1h
SET collectioninterval=1h
SET summarizationdetails=HDWMQY
cd %CANDLE_HOME%\bin
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK CLIENT NODE STORAGE"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK CLIENT MISSED FILES"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK CLIENT NODE STATUS"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK DATABASE"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK SCHEDULE"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK STORAGE POOL"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK TAPE USAGE"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK TAPE VOLUME"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK NODE ACTIVITY"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK SERVER"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK STORAGE DEVICE"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK ACTIVITY LOG"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK OCCUPANCY"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK REPLSTATUS"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK REPLDETAILS"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
tacmd.exe histconfiguregroups -u %itmuser% -w %password% -t KSK -o "KSK ACTIVITY SUMMARY"
-i %warehouseinterval% -c %collectioninterval% -d %summarizationdetails%
```

3. Start collecting data by issuing the following commands:

```
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK CLIENT NODE STORAGE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK CLIENT MISSED FILES"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK CLIENT NODE STORAGE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK DATABASE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK SCHEDULE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK STORAGE POOL"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK TAPE USAGE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK TAPE VOLUME"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK NODE ACTIVITY"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK SERVER"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK STORAGE DEVICE"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK ACTIVITY LOG"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK OCCUPANCY"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK REPLSTATUS"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK REPLDETAILS"
tacmd.exe histstartcollection -u %itmuser% -w %password% -t KSK -o "KSK ACTIVITY SUMMARY"
```

Installing software for custom BIRT reports

You can create your own reports using the Business Intelligence and Reporting Tools (BIRT) software.

Ensure that you have fulfilled the IBM JDK and JRE requirements listed in the software requirements section for installing optional software. See “System requirements” on page 112.

For help regarding setup, configuration, and troubleshooting of BIRT reports visit: BIRT Report Designer, v2.2.1, for Tivoli Common Reporting

To create your own custom reports using BIRT and Tivoli Common Reporting, complete the following steps:

1. Download and install BIRT, version 2.2.1, All-In-One software by using one of the following websites:
 - For the BIRT software that you need to download and install, go to the following IBM Tivoli Integrated Service Management Library website: BIRT Report Designer, v2.2.1, for Tivoli Common Reporting
 - If you cannot access the Integrated Service Management Library, you can obtain the software from the BIRT website:
BIRT Report Downloads
2. Import the data, configure the data source, and customize the reports following the directions in *Customizing Tivoli Common Reporting Report Designs* found at: Customizing Tivoli Common Reporting Report Designs

Related information:

 [Tivoli Common Reporting Information Center](#)

Chapter 10. Upgrading Tivoli Monitoring for Tivoli Storage Manager to Version 6.3, or later

| You can upgrade Tivoli Monitoring for Tivoli Storage Manager from V6.1 and V6.2
| to V6.3, or later. The monitoring agents that are installed on any of your Tivoli
| Monitoring for Tivoli Storage Manager servers must be upgraded to the same
| level.

Upgrade scenarios

Before upgrading Tivoli Monitoring for Tivoli Storage Manager, choose the scenario that best meets the needs of your company.

- Scenario 1: Your environment is monitoring 1-5 Tivoli Storage Manager servers.
- Scenario 2: Your environment is monitoring more than 5 Tivoli Storage Manager servers.
- Scenario 3: You have an existing IBM Tivoli Monitoring environment that was not installed as part of Tivoli Monitoring for Tivoli Storage Manager.

Important Notes:

1. If you have a Tivoli Storage Manager server that is in a different timezone than the system with Tivoli Monitoring for Tivoli Storage Manager, install the monitoring agent on the Tivoli Storage Manager server. See Scenario 2 to install the agent directly on the Tivoli Storage Manager server.
2. If you have more than five servers, installing the monitoring agent on each of the servers is the most efficient use of memory on both the Tivoli Storage Manager server, and the Tivoli Monitoring for Tivoli Storage Manager server.

Upgrading Tivoli Monitoring for Tivoli Storage Manager

Table 30. Upgrade scenarios

Upgrade scenario number	Description	Tasks that you must perform
Scenario 1	Use this scenario for an upgraded installation, with a plan to monitor and report on 1-5 Tivoli Storage Manager servers.	<p>Perform all of the tasks in this scenario on the same system:</p> <ol style="list-style-type: none"> 1. Upgrade Tivoli Monitoring for Tivoli Storage Manager. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. 2. Upgrade the Administration Center. Ensure that you select the Tivoli Common Reporting component during the installation to install new reports. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor.
Scenario 2	Use this scenario for an upgraded installation, with a plan to monitor and report on more than 5 Tivoli Storage Manager servers.	<ol style="list-style-type: none"> 1. Upgrade Tivoli Monitoring for Tivoli Storage Manager. The approximate installation time is 45 - 90 minutes. 2. Upgrade the monitoring agents that are installed on any of your Tivoli Storage Manager servers. Optionally, install and configure additional agents on any Tivoli Storage Manager servers that you want to monitor. The approximate upgrade time for the agent is 15 - 30 minutes, and an additional 10 minutes, per agent, to manually configure each agent. 3. Upgrade the Administration Center. Ensure that you select the Tivoli Common Reporting component during the installation to install new reports. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor. <p>Restriction: The monitoring agent is not supported on Solaris, HP, and Linux ppc64.</p>

Table 30. Upgrade scenarios (continued)

Upgrade scenario number	Description	Tasks that you must perform
Scenario 3	Use this scenario for upgrading an existing IBM Tivoli Monitoring environment.	<p>Prerequisite: You must have IBM Tivoli Monitoring version 6.2.2 FP2, or later installed.</p> <ol style="list-style-type: none"> 1. Upgrade the monitoring agent on the IBM Tivoli Monitoring server where Tivoli Enterprise Monitoring server and Tivoli Enterprise Portal server are installed. During the agent upgrade, you must specify the same directory as you did when you installed IBM Tivoli Monitoring. 2. Upgrade the monitoring agents that are installed on any of your Tivoli Storage Manager servers. Optionally, install and configure additional agents on any Tivoli Storage Manager servers that you want to monitor. The approximate upgrade time for the agent is 15 - 30 minutes, and an additional 10 minutes, per agent, to manually configure each agent. 3. Upgrade the Administration Center. Ensure that you select the Tivoli Common Reporting component during the installation to install new reports. The approximate installation time is 45 - 90 minutes, depending on the speed of your system. <p>Notes:</p> <ol style="list-style-type: none"> 1. You cannot install IBM Tivoli Monitoring for Tivoli Storage Manager on a system where Tivoli Storage Manager server is installed. 2. However, you can install the monitoring agent on any remote Tivoli Storage Manager server that you want to monitor. <p>Restriction: The monitoring agent is not supported on Solaris, HP, and Linux ppc64.</p>

Upgrading to version 6.3 or later, from the installation wizard

You can upgrade Tivoli Monitoring for Tivoli Storage Manager to version 6.3 using the Tivoli Monitoring for Tivoli Storage Manager installation wizard.

Before you begin the upgrade:

- Download the upgrade package from Passport Advantage, or from the FTP site at <ftp://public.dhe.ibm.com/storage/tivoli-storage-management/maintenance/reporting/v6r3/LATEST>.
- Extract the installation files to an empty directory. Do not extract to a directory that contains previously extracted files, or any other files.
- Ensure that there are no spaces, and no non-ASCII characters in the file name or path.
- Use short path names for the directory to avoid problems with the 255 character path limit on Windows systems. For example: C:\tsm_images.
- Review the upgrade scenarios, and choose the one that best suits your needs.
- Optionally, perform a backup of your existing system.
- Review the installation worksheet to confirm that you have the required user IDs, passwords, and access privileges, see “Installation worksheet” on page 114.
- Close all applications, including the Tivoli Enterprise Portal.

Important notes and restrictions:

- If you uninstalled a previous version of Tivoli Monitoring for Tivoli Storage Manager, before you reinstall, confirm that you completed a successful uninstallation before reinstalling. That includes ensuring that the DB2 users, db2admin does not exist. To learn more about uninstalling, see “Uninstalling Tivoli Monitoring for Tivoli Storage Manager” on page 149.
- Do not install on a system that already has a Tivoli Storage Manager server installed.
- Do not use a domain ID to install. The Windows user ID that you use when installing must be a local ID with administrator privileges, and cannot be a domain ID.

Attention: Do not alter the DB2 software that is installed with IBM Tivoli Monitoring for Tivoli Storage Manager installation packages and fix packs. Do not install or upgrade to a different version, release, or fix pack of DB2 software because doing so can damage the database. Tivoli Monitoring for Tivoli Storage Manager can use only components and versions that are installed as part of the Tivoli Monitoring for Tivoli Storage Manager installation.

To upgrade Tivoli Monitoring for Tivoli Storage Manager, complete these steps:

1. Stop all of the Tivoli Monitoring for Tivoli Storage Manager agents that are running on the system. From the Manage Tivoli Enterprise Monitoring Services window, select all of the agents, right-click and select **Stop**.

Remember: Be sure to close all windows including the Tivoli Enterprise Portal window, before beginning the upgrade.

2. Choose whether you want to upgrade from the DVD media, or from a downloaded package file, and complete the following steps to begin the upgrade:

Install from DVD media:	Install from downloaded package file:
<ol style="list-style-type: none"> 1. Change directories to the DVD drive, and click the install.exe file to begin the installation wizard. 	<ol style="list-style-type: none"> 1. Verify that the executable file is in the directory where you want the extracted files to be located, and that there is at least 5 GB of available space for the extracted files. Restrictions: <ol style="list-style-type: none"> a. Ensure that there are no spaces, and no non-ASCII characters in the file name or path. b. Use short path names for the directory to avoid problems with the 255 character path limit on Windows systems. For example: C:\tsm_images. 2. Double-click the name of the package file to extract the installation files. Tip: Extract the installation files to an empty directory. Do not extract to a directory that contains previously extracted files, or any other files. 3. Optionally, locate the prereqcheck.exe file, and run it to ensure that your system meets all requirements. See Running the installation prerequisite checker. 4. Double-click the install.exe file, and follow the wizard instructions to complete the installation.

3. Restart any agents that you stopped at the beginning of this procedure.
4. Verify that the upgrade was successful by completing the following steps:
 - Open the Manage Tivoli Enterprise Management Services application and look at the Tivoli Enterprise Portal server version to verify that it is 06.22.02.00. Look at the Monitoring Agent for Tivoli Storage Manager template and verify that the version is 06.33.00.00.
 - Open a DB2 command window and issue db2level to verify that the version of DB2 is 9.7.4.
 - Review the tsmCustomClient.jar file timestamp to ensure that it is recent.

Note: If there were any errors during the upgrade, review the following steps for assistance:

- If there are any errors during the upgrade, the summary page lists the errors and directs you to an error log file. If you accepted the default directory during the upgrade, the log file can be found at: C:\IBM\logs.txt.
- The logs.zip file contains all of installation log files for or all of the different components, and can be found at: *install_dir*\. For example, C:\IBM\logs.zip.
- For more help, see Reviewing the logs.zip file to resolve installation failures in the *Problem Determination Guide*.

Upgrade any existing monitoring agents that were installed directly on of your Tivoli Storage Manager servers.

Upgrading Tivoli Monitoring for Tivoli Storage Manager

Note: Monitoring agents that are already at version 6.3.x, do not need to be upgraded unless you want to use the new SSL feature in V6.3.3. The monitoring agents do not need to be re-created. You can select the existing agent, right-click, and select **Reconfigure** instead.

After you complete the upgrade, you must install the Version 6.3 or later Administration Center, including the Tivoli Common Reporting component. See Chapter 19, “Installing and configuring the Administration Center,” on page 179.

Remember: The data source and all previous reports are overwritten during the Administration Center installation. If you customized any BIRT or Cognos reports that you want to save, you must export them before you install the Administration Center. After the installation is complete, you can import the customized reports.

Upgrading the monitoring agent

You can upgrade monitoring agents that are at an earlier version without having to uninstall them.

You do not need to upgrade monitoring agents that are already at V6.3, or later unless you want to use the new SSL feature that is in V6.3.3. The monitoring agents do not need to be re-created. You can select the existing agent, right-click, and select **Reconfigure** instead.

To upgrade your existing monitoring agents to version 6.3, complete these steps:

1. Review the upgrade scenarios and the capacity planning information to determine whether to install more agents on an existing Tivoli Monitoring system, or on a remote Tivoli Storage Manager server.
2. Stop all existing monitoring agents by using one of the following methods:
 - From the Manage Tivoli Enterprise Monitoring Services window, select each monitoring agent instance, and click **Actions > Stop**.
 - To stop the agents by using the command line, complete the following steps:
 - a. Display the agents that are running by issuing the following command, and then review the output to determine which services are running:

```
./cinfo -r
```
 - b. Stop all of the Tivoli Storage Manager instances by issuing the following command:

```
./itmcmd agent -o instance_name stop sk
```
3. Install a version 6.3 or later monitoring agent on the remote Tivoli Storage Manager that you want to monitor, or on an existing IBM Tivoli Monitoring system. For details, see Installing monitoring agents.
4. Return to the Manage Tivoli Enterprise Monitoring Services window, select each monitoring agent instance, right-click, and select **Start**, or you can restart the agents by issuing the following command:

```
./itmcmd agent -o instance_name start sk
```

After you upgrade the agent, verify that the upgrade was successful. Open the Manage Tivoli Enterprise Monitoring Services application and look at the Monitoring Agent for Tivoli Storage Manager template to verify that the version of the agent is correct.

Chapter 11. Uninstalling Tivoli Monitoring for Tivoli Storage Manager

You can uninstall Tivoli Monitoring for Tivoli Storage Manager if it is no longer needed.

Uninstalling Tivoli Monitoring for Tivoli Storage Manager

You can uninstall Tivoli Monitoring for Tivoli Storage Manager using the command line, or the graphical user interface. If you plan to reinstall, this procedure helps to ensure that all previous versions and directories are deleted from your system.

1. Click **Start > Programs > IBM Tivoli Monitoring > Manage Tivoli Enterprise Monitoring Services**, and look in the **Status** column to determine which agents are started.
2. Stop all Tivoli Monitoring for Tivoli Storage Manager agents. Select each agent and click **Actions > Stop**, or click the stoplight icon. You can double-click the agent to toggle from start to stop, but care should be taken not to accidentally start a stopped agent.
3. Choose one of these uninstallation methods:

To uninstall using the graphical interface:	To uninstall using the command-line interface:
Click Start > Control Panel > Programs > Programs and Features , select IBM Tivoli Monitoring for Tivoli Storage Manager, and follow the menus to uninstall the software.	Open a command prompt window, navigate to <i>installation_directory\uninst</i> directory, and issue the <code>uninstall.exe</code> command. The <i>installation_directory</i> is the location you selected to install Tivoli Monitoring for Tivoli Storage Manager. For example: <code>C:\IBM\uninst</code> .

To verify that the uninstallation was successful, click **Start > Control Panel > Services**, and ensure that no Cognos or Manage Tivoli Monitoring Services processes are running.

If IBM Tivoli Monitoring for Tivoli Storage Manager no longer displays in the **Programs** menu, but you still have some of the components on your system, you can manually remove those components:

- Click **Start > Control Panel > Add / Remove Programs > IBM Tivoli Monitoring > Change/Remove**, and follow the prompts.
- To remove the agent, click **IBM Tivoli Monitoring for storage > Change/Remove**, and follow the prompts.
- To remove DB2, click **DB2 Enterprise Server Edition - DBCOPY1 > Change/Remove**, and follow the prompts.
- Remove the installation directory. For example, remove `C:\IBM`.
- Restart the system.

Uninstalling monitoring agents

Uninstalling monitoring agents

If you installed Tivoli Monitoring for Tivoli Storage Manager agents by using the IBM Tivoli Monitoring installer, you can uninstall the agents by using a graphical user interface.

To uninstall monitoring agents, complete the following steps:

1. Click **Start > Control Panel > Programs and Features**.
2. Select **IBM Tivoli Monitoring** and click **Uninstall**.
3. In the Welcome panel, click **Modify** and **Next**.
4. When a message indicates that cleared items will be uninstalled, click **OK**.
5. In the Add or Remove Features panel, expand the list of features. Clear all **Monitoring Agent for Tivoli Storage Manager** check boxes. Click **Next**.
6. In the Start Copying Files panel, review the settings. Verify that the features that must remain installed are listed, and that the **Monitoring Agent for Tivoli Storage Manager** feature is not listed. Click **Next**.
7. Continue to step through the wizard panels to ensure that all required features are installed and configured.
8. In the Maintenance Complete panel, click **Finish**.
9. Restart the system.

Part 3. Installing the Operations Center

This overview summarizes key concepts to understand before you install and configure the IBM Tivoli Storage Manager Operations Center. It also summarizes the methods for installing or uninstalling the Operations Center.

Table 31 lists the key concepts to understand and indicates where to find information about these concepts.

Table 32 lists the methods for installing or uninstalling and indicates where to find the associated instructions.

Table 31. Key concepts to understand before you install and configure the Operations Center

Key concepts to understand	Where to find the information
System requirements Restriction: To manage a server with the Operations Center, the server must have Tivoli Storage Manager V6.3.4 or later installed.	"System requirements for the Operations Center" on page 153 <ul style="list-style-type: none">"Operating system requirements" on page 155"Web browser requirements" on page 155"Language requirements" on page 155
IBM Installation Manager	"IBM Installation Manager" on page 156
Prerequisite checks	"Prerequisite checks" on page 157
Operations Center installation package	"Opening the Operations Center installation package" on page 161
Installation credentials	"Installation credentials for the Operations Center" on page 157
Installation directories	"Installation directories" on page 157
Port numbers	"Port numbers" on page 158
Password for secure communications	"Password for secure communications" on page 158
Hub and spoke servers	"Hub and spoke servers" on page 167

Table 32. Methods for installing or uninstalling the Operations Center

Installation method	Where to find the instructions
Graphical	<ul style="list-style-type: none">"Installing the Operations Center by using a graphical wizard" on page 161"Uninstalling the Operations Center by using a graphical wizard" on page 175
Console	<ul style="list-style-type: none">"Installing the Operations Center in console mode" on page 162"Uninstalling the Operations Center in console mode" on page 175
Silent mode	<ul style="list-style-type: none">"Installing the Operations Center in silent mode" on page 162"Uninstalling the Operations Center in silent mode" on page 176

Chapter 12. Planning to install the Operations Center

Before you install the Operations Center, you must understand some key concepts such as system requirements, installation credentials, and the default location of installation directories.

System requirements for the Operations Center

Before you install the Operations Center, ensure that your system meets the minimum requirements.

Operations Center requirements

The following resources are required to run the Operations Center:

- One processor core
- 4 GB of memory
- 1 GB of disk space

You can install the Operations Center on the same computer as a Tivoli Storage Manager server, or on a separate computer.

To use the same computer, it must meet the Operations Center system requirements in addition to the requirements that apply for the Tivoli Storage Manager server.

Hub and spoke server requirements

The first Tivoli Storage Manager server that you connect to the Operations Center is designated as a *hub server*. In a multiple-server environment, you can connect additional servers, called *spoke servers*. The spoke servers send alerts and status information to the hub server.

When you configure a Tivoli Storage Manager server as a hub or spoke server, status monitoring is automatically enabled. Additional system resources are required to support status monitoring.

The hub and spoke server requirements are based on the default monitoring settings. If you reduce the default data refresh interval for the Operations Center, the servers require further resources.

Hub and spoke servers must have Tivoli Storage Manager V6.3.4 or later installed.

Tip: If only one Tivoli Storage Manager server is monitored by the Operations Center, that server is still called a hub server, even though no spoke servers are connected to it.

A hub or spoke server that manages 1000 Tivoli Storage Manager clients (client nodes or virtual machine file spaces) requires the following additional resources to support Operations Center monitoring:

- Approximately 1.1 processor cores
- 2 GB of disk space for the server database

Installing the Operations Center

- 10 GB of disk space for the archive log (assumes that a full database backup runs every 24 hours)

Spoke servers send approximately 30 - 60 MB of data to the hub server every hour. Each data collection cycle on the spoke server generates approximately 2.5 - 5 MB of upstream network-session traffic.

Even if a hub or spoke server manages fewer than 1000 clients, consider implementing the minimum requirements.

For every additional 1000 clients that are managed by a hub or spoke server, add 2 GB of database space, 10 GB of log space, and reserve one-tenth of a processor core. For a spoke server, expect an extra 30 - 60 MB of network traffic.

In a multiple-server environment, the hub server must also meet the following requirements:

- Additional database and log space, equal to the total requirement for all the spoke servers.
- Additional processor resources, equal to the total requirement for all clients in the environment.
- Additional I/O capability for the database volumes, to support approximately 200 I/O operations per second (IOPS) for every 1000 clients in the environment. This estimate assumes an average I/O size of 8 KB.

Tips:

- To support the additional I/O requirements, the hub server database should be located on a solid-state drive (SSD) or on an external SAN disk storage device with multiple volumes or multiple spindles under each volume.
- In an environment with fewer than 1000 clients, consider establishing a baseline capability of 1000 IOPS for the hub server database if the hub server manages any spoke servers.

Requirements example

Consider an environment that has the following configuration:

- A hub server that manages 1000 clients
- Five spoke servers, each of which manages 2000 clients

In this example, the servers require the following resources to support Operations Center monitoring, in addition to the resources that are needed to provide backup services to clients:

Spoke servers

Each spoke server requires the following additional resources:

- Approximately 1.2 processor cores
- 4 GB of disk space for the server database
- 20 GB of disk space for the archive log

Each spoke server sends approximately 60 - 120 MB of data to the hub server every hour.

Hub server

The hub server requires the following additional resources:

- Approximately two processor cores

- 22 GB of disk space for the server database
- 110 GB of disk space for the archive log
- 2200 IOPS capability for the server database volumes

Tip: Consider exceeding the disk space requirements for the database and log by 25% - 50% to handle additional processing needs that might occur.

For more information, see *Tivoli Storage Manager Optimizing Performance* and the IBM Support Portal at <http://www.ibm.com/support/entry/portal/>.

Related concepts:

“Hub and spoke servers” on page 167

Operating system requirements

The Operations Center is available for AIX, Linux, and Windows systems.

- The following are the Windows systems on which you can install the Operations Center:
 - Microsoft Windows Server 2008: Standard, Enterprise, or Datacenter x64 Edition (64-bit only)
 - Microsoft Windows Server 2008 R2: Standard, Enterprise, or Datacenter

The Operations Center can monitor any server that runs Tivoli Storage Manager V6.3.4 or later. Servers are not limited to the operating systems that are supported for the Operations Center.

Web browser requirements

The Operations Center supports multiple web browsers.

The following web browsers are supported:

- Apple Safari on the iPad
- Google Chrome
- Microsoft Internet Explorer 9 and 10
- Mozilla Firefox ESR 10 or later

For optimal viewing, ensure that the screen resolution for your system is set to a minimum of 1024 X 768 pixels.

Language requirements

By default, the Operations Center uses the language that the web browser uses. However, the installation process uses the language that the operating system uses. Verify that the operating system and the web browser are set to the language that you require.

You can use the languages that are shown:

Table 33. Operations Center languages on Windows systems

Language	Language option value
Chinese, Simplified	chs
Chinese, Traditional	cht
English	ameng
French	fra

Table 33. Operations Center languages on Windows systems (continued)

Language	Language option value
German	deu
Italian	ita
Japanese (Shift-JIS)	jpn
Korean	kor
Portuguese, Brazilian	ptb
Russian	rus
Spanish	esp

IBM Installation Manager

The Operations Center uses IBM Installation Manager, which is an installation program that can use remote or local software repositories to install or update many IBM products.

If the required version of IBM Installation Manager is not already installed, it is automatically installed or upgraded when you install the Operations Center. It must remain installed on the system so that the Operations Center can be updated or uninstalled later as needed.

The following terms represent key concepts that relate to IBM Installation Manager:

Offering

An installable unit of a software product. The Operations Center offering contains all of the media that IBM Installation Manager requires to install the Operations Center.

Package

The group of software components that are required to install an offering. The Operations Center package contains the following components: IBM Installation Manager installer and the Operations Center offering.

Package group

A set of packages that share a common parent directory. The default package group for the Operations Center package is IBM Tivoli Storage Manager.

Repository

A remote or local storage area for data and other application resources. The Operations Center package is stored in a repository on IBM Fix Central.

Shared resources directory

A directory that contains software files or plug-ins that are shared by packages. IBM Installation Manager stores installation-related files on the shared resources directory, including files that are used for rolling back to a previous version.

Prerequisite checks

The installation program for the Operations Center verifies that prerequisite requirements are met.

The prerequisite checks verify the following items:

- The minimum memory requirement, as described in “System requirements for the Operations Center” on page 153
- The operating system requirements, as described in “Operating system requirements” on page 155
- The host name of the computer where the web server for the Operations Center is to be installed.

The host name must not contain double-byte character set (DBCS) characters or the underscore character (_). Although it can contain the hyphen character (-), it cannot have a hyphen as the last character in the name.

- The installation location, as described in “Installation directories”

Installation credentials for the Operations Center

To install the Operations Center, you must have the appropriate credentials.

You must use the following user account:

Administrator

Installation directories

During the installation process, you must specify the installation directory paths for the Operations Center and for IBM Installation Manager.

Operations Center installation directory

The Operations Center is installed in the `ui` subdirectory of the installation directory.

The following path is the default path for the Operations Center installation directory:

`c:\Program Files\Tivoli\TSM`

For example, if you use the default path, the Operations Center is installed in the following directory:

`c:\Program Files\Tivoli\TSM\ui`

The installation directory path must meet the following criteria:

- The path must contain no more than 128 characters.
- The path must include only ASCII characters.
- The path cannot include non-displayable control characters.
- The path cannot include any of the following characters:

`% | < > ' " $ & ; *`

Installation Manager installation directory

The following path is the default path for the Installation Manager installation directory:

C:\Program Files\IBM\Installation Manager

Port numbers

During the installation process, you must specify the port numbers that are used by the web server for the Operations Center.

The values for the nonsecure (http) and secure (https) port numbers must meet the following criteria:

- Each port number must be an integer in the range 1024 - 65535.
- Each port number must be unique. The same port number cannot be used for both ports.
- The port numbers cannot be already in use or allocated to other programs.

If you do not specify a port number, the following default values are used:

Nonsecure port (http)

11080

Secure port (https)

11090

After you install the Operations Center, if you do not remember which port numbers you specified, refer to the following file, which contains the Tivoli Storage Manager server connection information:

`installation_dir\ui\Liberty\usr\servers\guiServer\bootstrap.properties`

where *installation_dir* represents the directory where the Operations Center is installed.

Password for secure communications

The Operations Center uses the HTTPS protocol to communicate with web browsers. You can optionally use the Secure Sockets Layer (SSL) protocol to secure communications between the Operations Center and the hub server, and between servers.

The truststore file of the Operations Center contains the SSL certificate that the Operations Center uses for HTTPS communication with web browsers. During installation of the Operations Center, you create a password for the truststore file.

Important: Remember the password because, if you later choose to set up SSL communication between the Operations Center and the hub server, you must use the same password to add the SSL certificate of the hub server to the truststore file.

Password length

Minimum: 6 characters

Maximum: 64 characters

The password must contain at least the following characters:

One uppercase letter (A – Z)

One lowercase letter (a – z)

One digit (0 – 9)

Two non-alphanumeric characters: ~ ! @ # \$ % ^ & * _ - + = ` | () { } [] : ;
< > , . ? /

Related tasks:

“Resetting the password for the truststore file of the Operations Center” on page 173

Chapter 13. Installing the Operations Center

You can install the Operations Center by using any of the following methods: a graphical wizard, the command line in console mode, or silent mode.

You cannot configure the Operations Center until you install, configure, and start the Tivoli Storage Manager server. Therefore, before you install the Operations Center, install the Tivoli Storage Manager V6.3.4 server package.

You can install the Operations Center on a computer with the Tivoli Storage Manager server or on a separate computer.

Opening the Operations Center installation package

You can obtain the installation package from the product DVD or from the IBM download site.

Use one of the following procedures to access the Operations Center installation files:

- To use the product DVD, complete the following steps:

Insert the Tivoli Storage Manager Operations Center DVD. Using Windows Explorer, go to the DVD drive, and double-click the drive to open it. The installation files are visible on that drive.

- To extract the installation files from a package that you obtain from the IBM download site, complete the following steps:

1. Obtain the following package file: 6.4.1.000-TIV-TSMOC-Windows.exe.
2. In Windows Explorer, double-click the file name to extract the installation files.

The self-extracting package file is extracted to the current directory.

Installing the Operations Center by using a graphical wizard

You can install or update the Operations Center by using the graphical wizard of IBM Installation Manager.

1. From the directory where the Operations Center installation package file is extracted, issue the following command:

```
install.bat
```

2. Follow the wizard instructions to install the IBM Installation Manager and Operations Center packages.

See Chapter 16, “Configuring the Operations Center,” on page 167.

Installing the Operations Center in console mode

You can install or update the Operations Center by using the command line in console mode.

1. From the directory where the installation package file is extracted, run the following program:
`install.bat -c`
2. Follow the console instructions to install the Installation Manager and Operations Center packages.

Configure the Operations Center, as described in Chapter 16, “Configuring the Operations Center,” on page 167.

Installing the Operations Center in silent mode

You can install or update the Operations Center in silent mode without any user interaction.

The input directory, in the directory where the installation package is extracted, contains the following sample response files for installing, updating, and uninstalling the Operations Center:

- `install_response_sample.xml`
- `update_response_sample.xml`
- `uninstall_response_sample.xml`

Rather than creating new response files, you can use these sample files as they are, with the default values, or you can customize them.

1. Create a response file, or use one of the following default response files:
 - `install_response_sample.xml`
 - `update_response_sample.xml`

If you use a default response file, modify the following line of the file to create a password for the truststore file of the Operations Center:

```
<data key='user.SSL_PASSWORD' value='mypassword' />
```

where *mypassword* represents the password that you want to create.

To generate a response file as part of a console-mode installation, complete the selection of the console-mode installation options. In the Summary panel, enter G to generate the response file according to the previously selected options.

2. From the directory where the installation package file is extracted, issue the following commands as appropriate:

To start the installation by accepting the default values, issue the following command:

```
install.bat -s -acceptLicense
```

To start the installation with a custom response file, issue the following command, where *response_file* represents the response file path, including the file name:

```
install.bat -s -input response_file -acceptLicense
```

Configure the Operations Center, as described in Chapter 16, “Configuring the Operations Center,” on page 167.

Chapter 14. Rolling back to a previous version of the Operations Center

By default, IBM Installation Manager saves earlier versions of a package to roll back to if you experience issues with later versions of updates, fixes, or packages. When the IBM Installation Manager rolls back a package to a previous version, the current version of the files is uninstalled, and an earlier version is reinstalled.

The rollback function is available only after the Operations Center is updated.

To roll back to a previous version of the Operations Center, use the **Roll Back** option on the first page of the IBM Installation Manager.

Chapter 15. Stopping and starting the web server

The web server of the Operations Center runs as a service and starts automatically.

If you must stop and start the web server for the Operations Center, for example, to restart the initial configuration wizard, use the following methods:

From the Services window, stop or start the service **Tivoli Storage Manager Operations Center**.

Chapter 16. Configuring the Operations Center

When you open the Operations Center for the first time after you install it, you must configure it to manage your storage environment.

Hub and spoke servers

The first Tivoli Storage Manager server that you connect to the Operations Center is designated as a *hub server*. In a multiple-server environment, you can connect more servers, called *spoke servers*. The spoke servers send alerts and status information to the hub server.

The Operations Center shows you a consolidated view of alerts and status information for the hub server and any spoke servers.

You can install the Operations Center on the same computer as a Tivoli Storage Manager server or on a different computer.

When you open the Operations Center for the first time, you connect it to one Tivoli Storage Manager server instance, which becomes the dedicated hub server. You can then connect more Tivoli Storage Manager servers as spoke servers.

Tip: If you use library sharing, and the library manager server meets the Operations Center system requirements, consider designating this server as the hub server. Few, if any, Tivoli Storage Manager clients are typically registered to the library manager server. The smaller client workload of this server can make it a good candidate to take on the additional processing requirements of a hub server.

To support the additional input/output requirements of a hub server, the server database must be on an SSD or on an external SAN disk storage device with multiple volumes or multiple spindles under each volume.

Performance

As a rule, a hub server can support 10-20 spoke servers. This number can vary, depending on your configuration.

The following factors have the most significant impact on system performance:

- The number of Tivoli Storage Manager clients or virtual machine file systems that are managed by the hub and spoke servers.
- The frequency at which data is refreshed in the Operations Center.
- The length of time for which status data is retained in the Operations Center.

Consider grouping hub and spoke servers by geographic location. For example, managing a set of hub and spoke servers within the same data center can help prevent issues that can be caused by firewalls or the lack of appropriate network bandwidth between different locations.

If necessary, you can further divide servers according to one or more of the following characteristics:

- The administrator who manages the servers
- The organizational entity that funds the servers

Configuring the Operations Center

- Server operating systems

Multiple hub servers

You can manage a hub server and multiple spoke servers from the same instance of the Operations Center.

If you have more than 10-20 spoke servers, or if resource limitations require the environment to be partitioned, you can configure multiple hub servers and connect a subset of the spoke servers to each hub server.

Restrictions:

- A single server cannot be both a hub server and a spoke server.
- Each spoke server can be assigned to only one hub server.
- Each hub server requires a separate instance of the Operations Center, each of which has a separate web address.

Administrator IDs and passwords

An administrator must have a valid ID and password on the hub server to log in to the Operations Center. An administrator ID is also assigned to the Operations Center so that the Operations Center can monitor servers.

The following Tivoli Storage Manager administrator IDs are required to use the Operations Center:

Operations Center administrator IDs

Any administrator ID that is registered on the hub server can be used to log in to the Operations Center. The authority level of the ID determines which tasks can be completed. You can create new administrator IDs by using the **REGISTER ADMIN** command. For information about this command, see the *Administrator's Reference*.

Restriction: To use an administrator ID in a multi-server configuration, the ID must be registered on the hub and spoke servers with the same password and authority level.

Consider using a Lightweight Directory Access Protocol (LDAP) server to manage authentication for these servers.

Another way to keep the credentials synchronized is to use the Tivoli Storage Manager enterprise configuration functions to automatically distribute changes to the administrator definitions.

For more information about the enterprise configuration functions, see *Managing a network of Tivoli Storage Manager servers* in the *Administrator's Guide*.

Monitoring administrator ID

When you initially configure the hub server, an administrator ID named `IBM-OC-server_name` is registered with system authority on the hub server and is associated with the initial password that you specify. This ID, which is sometimes called the *monitoring administrator*, is intended for use only by the Operations Center.

Do not delete, lock, or modify this ID. The same administrator ID with the same password is registered on any spoke servers that you add. The

password is automatically changed on the hub and spoke servers every 90 days. You do not need to use or manage this password.

Opening the Operations Center

You can open the Operations Center with a web browser.

You can open the Operations Center by using any supported web browser. For a list of supported web browsers, see the chapter about web browser requirements in the *Installation Guide*.

Start your browser, and enter `https://hostname:secure_port/oc`, where *hostname* represents the name of the computer where the Operations Center is installed, and *secure_port* represents the port number that the Operations Center uses for HTTPS communication on that computer.

Configuring the hub server: If you are connecting to the Operations Center for the first time, you are redirected to the initial configuration wizard. In that wizard, you must provide the following information:

- Connection information for the Tivoli Storage Manager server that you designate as a hub server
- Login credentials for an administrator who is defined to that Tivoli Storage Manager server

If the event-record retention period of the Tivoli Storage Manager server is less than 14 days, the value automatically increases to 14 days when you configure the server as a hub server.

If you have multiple Tivoli Storage Manager servers in your environment, add the other Tivoli Storage Manager servers as spoke servers to the hub server, as described in “Adding spoke servers.”

Related concepts:

“Port numbers” on page 158

“Hub and spoke servers” on page 167

Adding spoke servers


After you configure the hub server for the Operations Center, you can add one or more spoke servers to that hub server.

1. In the menu bar at the top of the Operations Center, click **Servers**. The TSM Servers page opens.

Tip: In the table on the TSM Servers page, a server might have a status of **Unmonitored**. An *unmonitored* server is a server that an administrator defined to the hub server by using the **DEFINE SERVER** command, but which is not yet configured as a spoke server.

2. Complete one of the following steps:

- Click the server to highlight it, and from the table menu bar, click **Monitor Spoke**.

- If the server that you want to add is not shown in the table, click  **Connect Spoke** in the table menu bar.

3. Provide the necessary information, and complete the steps in the spoke configuration wizard.

Note: If the event-record retention period of the server is less than 14 days, the value automatically increases to 14 days when you configure the server as a spoke server.

Sending alerts by email

Tivoli Storage Manager can send an email when an alert is triggered. An alert represents one or more error messages that are issued by a Tivoli Storage Manager server. Alerts can be shown in the Operations Center and can be sent from the server to administrators by email.

An SMTP server is required to send and receive alerts by email.

For detailed information about the commands that are mentioned here, see the *Administrator's Reference*.

An administrator with system privilege can complete the following steps on the server to enable alerts to be sent by email:

1. Issue the **QUERY MONITORSETTINGS** command to verify that alert monitoring is set to ON. If the monitoring settings output indicates Off, issue the **SET ALERTMONITOR** command to start alert monitoring on the server:

```
set alertmonitor on
```

Tip: If alert monitoring is on, alerts are displayed in the Operations Center even though the alert email feature might not be enabled.

2. Enable alerts to be sent by email by issuing the **SET ALERTEMAIL** command:

```
set alertemail on
```
3. Define the SMTP host server that is used to send email by issuing the **SET ALERTEMAILSMTPHOST** command:

```
set alertemailsmtp host
```
4. Set the SMTP port by issuing the **SET ALERTEMAILSMTPPORT** command:

```
set alertemailsmtp port port_number
```

Tip: The default port is 25.

5. Define the email address of the sender of the alerts by issuing the **SET ALERTEMAILFROMADDR** command:

```
set alertemailfromaddr email_address
```
6. Add the administrator IDs that want to receive alerts by email to one or more alert triggers by issuing the **DEFINE ALERTTRIGGER** or **UPDATE ALERTTRIGGER** command:

```
define alerttrigger message_number Admin=admin1,admin2  
update alerttrigger message_number ADDadmin=admin3 deladmin=admin1
```
7. Register the administrator ID, or update an administrator ID to enable email alerts and set the email address. Specify alert=yes, and ensure that the administrator ID is updated on the server with the corresponding email address by issuing the **REGISTER ADMIN** or **UPDATE ADMIN** command:

```
register admin admin_name alert=yes emailaddress=email_address  
update admin admin_name alert=yes emailaddress=email_address or
```

Tip: You can suspend email alerts for an administrator by using one of the following methods:

- Use the **UPDATE ADMIN** command, and specify ALERT=no.

- Use the **ALERTTRIGGER** command, and specify the **DELADMIN** parameter.

Example: Enabling multiple administrators to receive an alert

The following example describes the commands that are used to enable the administrators myadmin, djadmin, and csdadmin to receive email alerts for ANR1075E messages.

```
set alertmonitor on
set alertmail on
set alertemailsmtphost mymailserver.domain.com
set alertemailsmtpport 450
set alertemailfromaddr srvadmin@mydomain.com
update admin myadmin alert=yes emailaddress=myaddr@example.com
update admin djadmin alert=yes emailaddress=djaddr@example.com
update admin csadmin alert=yes emailaddress=csaddr@example.com
define alerttrigger anr0175e admin=myadmin,djadmin,csdadmin
```

Chapter 17. Troubleshooting the Operations Center installation

Descriptions of possible installation problems and their solutions are provided.

Resetting the password for the truststore file of the Operations Center

To add the SSL certificate of the hub server to the truststore file of the Operations Center, you must know the truststore-file password, which was created when the Operations Center was installed. If you do not know the password, you can reset it.

In the following procedure, you create a new password, delete the truststore file of the Operations Center, and restart the web server of the Operations Center. A new truststore file is automatically created, and the SSL certificate of the Operations Center is automatically placed into the truststore file.

1. Stop the web server of the Operations Center. For instructions, see Chapter 15, “Stopping and starting the web server,” on page 165.
2. Go to the following directory:

`installation_dir\ui\Liberty\usr\servers\guiServer`

where *installation_dir* represents the directory where the Operations Center is installed.

3. Open the `bootstrap.properties` file.

The `bootstrap.properties` file contains the truststore-file password in encrypted or unencrypted format.

- The following example shows an encrypted password, `{xor}MiYPPiwsKDA0w==`, in the password line of the file. Encrypted passwords begin with the text string `{xor}`.
`tsm.truststore.pswd={xor}MiYPPiwsKDA0w==`
- The following example shows an unencrypted password, `J8b%B`, in the password line of the file:
`tsm.truststore.pswd=J8b%B`

Tip: If the password is unencrypted, you can use it to open the truststore file, and you are not required to reset the password.

4. Reset the password by replacing the password in the `bootstrap.properties` file with a new password. You can replace the password with an unencrypted or encrypted password. Remember the unencrypted version of the password for future use.
- To create an unencrypted password, use the following rules:

Password length:

Minimum: 6 characters

Maximum: 64 characters

The password must contain at least the following characters:

One uppercase letter (A – Z)

One lowercase letter (a – z)

One digit (0 – 9)

Troubleshooting the Operations Center

Two non-alphanumeric characters: ~ ! @ # \$ % ^ & * _ - + = ` | () { }
[] : ; < > , . ? /

- To create an encrypted password, complete the following steps:
 - a. Create an unencrypted password.
 - b. From the operating-system command line, go to the following directory:

installation_dir\ui\Liberty\bin

- c. Issue the following command:

```
securityUtility.bat encode myPassword
```

where *myPassword* represents the unencrypted password.

The command returns an encrypted password. For example:

```
{xor}MiYPPiwsKDAtoW==
```

Note: The following error message might be displayed:

! "java" is not recognized as an internal or external command,
operable program or batch file.

If this error message is displayed, complete the following steps:

- 1) Issue the following command:

```
set JAVA_HOME="installation_dir\ui\jre"
```

where *installation_dir* represents the directory where the
Operations Center is installed.

- 2) Reissue the following command:

```
securityUtility.bat encode myPassword
```

5. Close the bootstrap.properties file.

6. Go to the following directory:

installation_dir\ui\Liberty\usr\servers\guiServer

7. Delete the truststore file of the Operations Center. The truststore file is the
following file:

gui-truststore.jks

8. Start the web server of the Operations Center.

A new truststore file is automatically created for the Operations Center, and the
SSL certificate of the Operations Center is automatically placed into the truststore
file.

For information about configuring the Operations Center to use the SSL protocol
for communications with the hub server, search for "SSL" in the embedded help
system of the Operations Center. In one step of the configuration procedure, you
are required to enter the unencrypted form of the truststore-file password.

Related concepts:

"Password for secure communications" on page 158

Chapter 18. Uninstalling the Operations Center

You can uninstall the Operations Center by using any of the following methods: a graphical wizard, the command line in console mode, or silent mode.

Uninstalling the Operations Center by using a graphical wizard

You can uninstall the Operations Center by using IBM Installation Manager installation wizard.

For information about the default path for the Installation Manager installation directory, see “Installation directories” on page 157.

1. To uninstall the Operations Center, start the Installation Manager.
Open the Installation Manager from the **Start** menu.
2. Click **Uninstall**.
3. Select **IBM Tivoli Storage Manager Operations Center**, and click **Next**.
4. Click **Uninstall**.
5. Click **Finish**.

Uninstalling the Operations Center in console mode

To uninstall the Operations Center by using the command line, you must run the uninstall program of IBM Installation Manager from the command line with the parameter for console mode.

1. In the directory where IBM Installation Manager is installed, go to the following subdirectory:
`eclipse\tools`
For example:
`C:\Program Files\IBM\Installation Manager\eclipse\tools`
2. From the `tools` directory, issue the following command:
`imcl.exe -c`
3. To uninstall, enter 5.
4. Choose to uninstall from the IBM Tivoli Storage Manager package group.
5. Enter N for Next.
6. Choose to uninstall the IBM Tivoli Storage Manager Operations Center package.
7. Enter N for Next.
8. Enter U for Uninstall.
9. Enter F for Finish.

Uninstalling the Operations Center in silent mode

To uninstall the Operations Center in silent mode, you must run the uninstall program of IBM Installation Manager from the command line with the parameters for silent mode.

The input directory, in the directory where the installation package is extracted, contains the following sample response files for installing, updating, and uninstalling the Operations Center:

- `install_response_sample.xml`
- `update_response_sample.xml`
- `uninstall_response_sample.xml`

Rather than creating new response files, you can use these sample files as they are, with the default values, or you can customize them.

1. In the directory where IBM Installation Manager is installed, go to the following subdirectory:

`eclipse\tools`

For example:

`C:\Program Files\IBM\Installation Manager\eclipse\tools`

2. From the `tools` directory, issue the following command, where *response_file* represents the response file path, including the file name:

```
imcl.exe -input response_file -silent
```

The following command is an example:

```
imcl.exe -input C:\tmp\input\uninstall_response.xml -silent
```

Part 4. Installing and upgrading the Administration Center

Use the Administration Center to administer Tivoli Storage Manager and Tivoli Monitoring for Tivoli Storage Manager from a supported browser anywhere in your network.

Chapter 19. Installing and configuring the Administration Center

Use the Administration Center to administer Tivoli Storage Manager and Tivoli Monitoring for Tivoli Storage Manager from a supported browser anywhere in your network.

A standard installation without Tivoli Common Reporting takes approximately 35 minutes. If you install the Tivoli Common Reporting feature, the installation takes approximately 90 minutes. The installation time depends on the speed of your processor and the memory that is available in your system.

Important: The deployment engine is automatically installed with the Administration Center. Do not uninstall the deployment engine. Uninstalling this component can cause problems when upgrading the Administration Center.

If you are upgrading the Administration Center, see Chapter 21, “Upgrading the Administration Center to Version 6.3 or later,” on page 203.

Use the following steps to install the Administration Center and other components, including Tivoli Integrated Portal:

1. Download and install the Administration Center. See “Installing the Administration Center components” on page 188.
2. Optional: Configure a Lightweight Directory Access Protocol (LDAP) server. See “Configuring LDAP user authentication” on page 192.
3. Verify the Administration Center installation. See “Verifying the Administration Center installation” on page 197.
4. Start the Tivoli Integrated Portal. See “Starting and stopping the Tivoli Integrated Portal server” on page 196.
5. Define your Tivoli Integrated Portal users. See “Defining Administration Center users to the Tivoli Integrated Portal” on page 198.
6. Add connections for the Tivoli Storage Manager servers that you want to manage. See “Defining Administration Center users to the Tivoli Integrated Portal” on page 198.
7. Set session length and Java heap size. See “Estimating Java heap memory size” on page 184.

Related tasks:

Chapter 21, “Upgrading the Administration Center to Version 6.3 or later,” on page 203

“Creating and configuring the agent instance” on page 123

Planning to install the Administration Center

To administer servers from a browser, plan to install the Administration Center.

Ensure that you review all applicable planning information, including system requirements, capacity planning, and installation scenarios.

Before you install the software, complete these tasks:

1. Read the system requirements that are required for your operating system.
2. Review the capacity planning information.
3. Choose an installation scenario that best suits your needs.
4. Review the installation worksheet and note the user IDs, passwords, and other values that are required during installation.
5. Optionally, run the prerequisite checker to verify the readiness of your installation environment.

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 many servers or administrators, consider installing the Administration Center on a separate system. See the capacity planning section.

For Administration Center system requirements, see the following website:
<http://www.ibm.com/support/docview.wss?uid=swg21515628>.

You can install the Administration Center Version 6.3 and later on the following platform:

- Windows (32-bit and 64-bit)

Administration Center capacity planning

Capacity planning is important in determining the setup of your environment. For large environments, you can estimate how many Tivoli Storage Manager Administration Center servers are required to support administrators and Tivoli Storage Manager servers.

With this information, you can allocate sufficient resources to meet the peak application demands with little or no performance degradation and loss of function. If the Administration Center server shares a system with other applications, add the processing and memory requirements of those applications to the Administration Center requirements. In this way, you can determine the total system requirements.

Tip: The Tivoli Storage Manager Administration Center Capacity Planner tool can simplify issuing capacity planning equations. It can provide recommendations for Administration Center hardware sizings. See your IBM representative to obtain this tool.

Maximum number of active administrators

It is possible to define many administrators to one Administration Center, however, the number of administrators who are active at the same time is limited.

An administrative task is best thought of as an interaction within the administration interface that produces some usable information or completes a preferred operation.

The maximum number of administrators who are logged in and conducting administrative tasks at a certain time for one Administration Center instance is 16. If too many administrators are logged in to the Administration Center at the same time, it is likely to result in an unacceptable rate of task failures and lost administrator productivity.

More administrators can likely be logged in at the same time if they run just a few tasks. For example, if more than 16 administrators are logged in at the same time, three or four, non-concurrent tasks per hour are possible. If the needs of your business require that several administrators be logged in at the same time, completing many tasks, plan for multiple Administration Center instances.

Processing capacity

You can meet high performance requirements for an Administration Center by using a dual-processor system with a speed of 3 GHz or faster.

The Administration Center server can use more processors, but there might not be a noticeable effect on the application performance. Adjust the processor utilization further by multiplying by the ratio of 3.4 GHz relative to the planned processor speed. Then, multiply by the ratio of two processors to the planned number of processors.

To help with planning your sizing, you can estimate the Administration Center processor utilization by using the following equation:

$$\text{processor utilization (\%)} = 0.15 + \text{tasks completed (per hour)} * 0.006$$

The tasks that are completed per hour rate is the highest total number of tasks per hour that is expected to be run with or on the Administration Center server. It includes tasks that are run by all administrators who are logged in at the time. If only one administrator is logged in, the number of tasks that are run per hour can be 20 - 100. This number is not to exceed 2850 tasks per hour.

I/O throughput

Administration Center disk and network input/output (I/O) requirements are not particularly demanding, so there is no need for sustained high I/O throughput.

Application response time suffers if network delays or disk I/O delays occur. A low latency network provides the best administrator response time. Networks that are poorly tuned, currently saturated by other applications, or with higher latency (WANs) might significantly affect Administration Center performance.

Processing memory

The most important resource requirement for the Administration Center is memory.

The Administration Center uses significant memory. The memory is based on the number of Tivoli Storage Manager servers or libraries that are controlled in the Administration Center, and the number of the other applications, such as Tivoli Common Reporting.

The Administration Center uses Java. To increase memory in Java, set a higher value for the Java heap size. A heap is a stack of data that tracks memory allocations. The Java heap size determines how much memory can be allocated to a particular Java Runtime Environment.

The maximum Java heap size is the value that is specified for the Administration Center server. The default is 512 MB. The largest value that can be configured for the maximum Java heap size is 1536 MB.

Add the additional memory that is required by the operating system to the memory required by any other applications on the Administration Center server. Configure the server with at least this much real memory. It is important that the required real memory is available. Without adequate real memory, significant response time degradation can occur as the result of system memory paging.

Minimizing memory usage

You can take steps to keep the Administration Center server memory available for those users and tasks that need it the most.

For the best results, complete these configuration items:

- Turn off all Administration Center server traces, except as needed for problem determination.
- Do not increase the Tivoli Integrated Portal session timeout above 30 minutes. Idle sessions can hold on to large amounts of memory until the session is canceled because of the timeout. To configure the session timeout, see “Configuring the session timeout period” on page 183.

You also achieve better results by completing the following operational tasks regularly:

- Close portlet pages when you are finished. Closing the pages frees up any memory that is held by those pages.
- Use available filtering options where provided when you view data in large tables. The additional search criteria reduces the amount of data that the Administration Center receives from the Tivoli Storage Manager server. It also reduces the amount of data that is sent to the browser and the amount of memory required.

Configuring the session timeout period:

Configure the Administration Center session timeout period by using the Administration Center Support Utility.

This utility is located in the IBM Tivoli Storage Manager installation directory under *install_root\tsmac\bin*. Run the supportUtil script from a command window and follow the instructions.

Start the tool by issuing: supportUtil.bat.

The following text is an example of the output:

User ID: iscadmin
Password: <enter password>

Administration Center Support Utility - Main Menu
=====

1. Manage Administration Center tracing
 2. Manage the maximum memory size the Administration Center can use
 3. Manage the Administration Center session timeout setting
 4. Collect trace files, logs and system information to send to support
 5. Generate a heap dump of the Java virtual machine
 6. Generate a Java core dump of the Java virtual machine
 7. View the log file for this utility
 9. Exit
- Enter Selection: 3

Administration Center Support Utility - Manage the Session
=====

1. Update the Administration Center session timeout setting
 2. View the Administration Center session timeout setting
 99. Return to main menu
- Enter Selection: 1

The session timeout setting determines how long a session can be idle before it times out. After a timeout occurs the user must log in again. The default timeout setting is 30 minutes. The minimum timeout setting is 10 minutes. To cancel this operation enter an empty value.

Enter the new session timeout (minutes): 30

Updating the session timeout to 30 minutes.....

Session timeout successfully updated. Restart ISC for changes to take effect.

Press Enter to continue . . .<return>

Administration Center Support Utility - Manage the Session
=====

1. Update the Administration Center session timeout setting
 2. View the Administration Center session timeout setting
 99. Return to main menu
- Enter Selection: 99

Administration Center Support Utility - Main Menu
=====

1. Manage Administration Center tracing
 2. Manage the maximum memory size the Administration Center can use
 3. Manage the Administration Center session timeout setting
 4. Collect trace files, logs and system information to send to support
 5. Generate a heap dump of the Java virtual machine
 6. Generate a Java core dump of the Java virtual machine
 7. View the log file for this utility
 9. Exit
- Enter Selection: 2

Administration Center Support Utility - Manage the JVM
=====

1. Update the maximum memory size the Administration Center can use
 2. View the maximum memory size the Administration Center can use
 99. Return to main menu
- Enter Selection: 1

Installing and configuring the Administration Center

The maximum memory size determines the largest amount of memory that can be used by the Administration Center. A minimum heap size of 512 MB is recommended. When used by 10 or more users, the recommendation is at least 1024 MB. To cancel this operation enter an empty value.

Enter the new JVM max memory size (MB): **1536**

Updating the maximum memory size to 1536 MB.....

Maximum memory size successfully updated.

Press Enter to continue . . .<return>

Estimating Java heap memory size

The Administration Center maintains information for each active administrative session as a set of objects in the configured Java heap memory. The memory requirements of an administrative session depend on the activities that the administrator runs during the session.

In the browser, each open page requires memory. Each open table requires more memory. The amount of memory depends on the number of rows and columns in the table.

Estimate the Administration Center Java heap size by issuing the following equation:

$$\text{JavaHeapAllocated (MB)} = 206 + \text{ActiveAdmins} * 30$$

ActiveAdmins is the maximum number of administrators who are logged in at one time. Additional administrators can be defined in the IBM Tivoli Integrated Portal, but if they are not logged in, no additional memory is required. The number of Tivoli Storage Manager server connections that are defined by an administrator in the Administration Center is not an important variable in determining the Java heap size requirements. More servers, however, imply that more actual work might be required. A larger maximum Java heap size provides more memory in the case of unexpected administration activity or workload growth. More real memory would be required as well.

Using a maximum Java heap size that is too small for the amount of work that is run in the Administration Center can affect performance. The Java Virtual Machine (JVM) completes garbage collection more frequently, there is higher processor utilization, and slower application response time. In certain conditions, the application is unable to complete the requested action because of memory allocation failure. It then becomes necessary to free up memory by closing work pages or logging out sessions.

Suggestions for reducing administrator session memory requirements include:

- Close work pages as soon as you are finished with them.
- Log out if you are not using any administrative functions for more than 30 minutes.
- Do not set the session timeout period to more than 30 minutes.

Configuring the maximum memory size (Java heap size):

Configure the Administration Center maximum memory size (Java heap size) by using the Administration Center Support Utility.

This utility is located in the IBM Tivoli Storage Manager installation directory under *install_root\tsmac\bin*. Run the supportUtil script from a command window and follow the instructions.

Start the tool by issuing: supportUtil.bat.

The following text is an example of the output:

User ID: iscadmin
Password: <enter password>

Administration Center Support Utility - Main Menu
=====

1. Manage Administration Center tracing
 2. Manage the maximum memory size the Administration Center can use
 3. Manage the Administration Center session timeout setting
 4. Collect trace files, logs and system information to send to support
 5. Generate a heap dump of the Java virtual machine
 6. Generate a Java core dump of the Java virtual machine
 7. View the log file for this utility
 9. Exit
- Enter Selection: 3

Administration Center Support Utility - Manage the Session
=====

1. Update the Administration Center session timeout setting
 2. View the Administration Center session timeout setting
 99. Return to main menu
- Enter Selection: 1

The session timeout setting determines how long a session can be idle before it times out. After a timeout occurs the user must log in again. The default timeout setting is 30 minutes. The minimum timeout setting is 10 minutes. To cancel this operation enter an empty value.

Enter the new session timeout (minutes): 30

Updating the session timeout to 30 minutes.....

Session timeout successfully updated. Restart ISC for changes to take effect.

Press Enter to continue . . .<return>

Administration Center Support Utility - Manage the Session
=====

1. Update the Administration Center session timeout setting
 2. View the Administration Center session timeout setting
 99. Return to main menu
- Enter Selection: 99

Administration Center Support Utility - Main Menu
=====

1. Manage Administration Center tracing
 2. Manage the maximum memory size the Administration Center can use
 3. Manage the Administration Center session timeout setting
 4. Collect trace files, logs and system information to send to support
 5. Generate a heap dump of the Java virtual machine
 6. Generate a Java core dump of the Java virtual machine
 7. View the log file for this utility
 9. Exit
- Enter Selection: 2

Administration Center Support Utility - Manage the JVM
=====

1. Update the maximum memory size the Administration Center can use
 2. View the maximum memory size the Administration Center can use
 99. Return to main menu
- Enter Selection: 1

Installing and configuring the Administration Center

```
The maximum memory size determines the largest amount of memory that can be
used by the Administration Center. A minimum heap size of 512 MB is
recommended. When used by 10 or more users, the recommendation is at least
1024 MB. To cancel this operation enter an empty value.
Enter the new JVM max memory size (MB): 1536
Updating the maximum memory size to 1536 MB.....
Maximum memory size successfully updated.
Press Enter to continue . . .<return>
```

Remember: Do not configure the maximum memory size (Java heap size) to be greater than the available real system memory, or significant performance degradation might occur.

Choosing a location for the Administration Center

Where you install your Administration Center can affect its performance.

During administration activities, more network traffic occurs between the Administration Center system and the administrator's browser than between the Administration Center system and a Tivoli Storage Manager server. Therefore, install the Administration Center close, in network topology, to the administrators, rather than close to the Tivoli Storage Manager servers. For example, if you are in Chicago and administer Tivoli Storage Manager servers in Los Angeles, Paris, and Tokyo, install the Administration Center in Chicago.

You can use a single Administration Center installation to administer multiple Tivoli Storage Manager servers. For availability reasons, you might prefer to install multiple Administration Center instances.

Consider the following statements to further determine where you can install the Administration Center.

You can install the Administration Center on the same system as the Tivoli Storage Manager server if this condition is true:

- You do not plan to install and use the Tivoli Common Reporting component to view historical reports from Tivoli Monitoring for Tivoli Storage Manager

You must install the Administration Center on a different system from the Tivoli Storage Manager server if one or more of the following conditions are true:

- The Administration Center is to be used with multiple Tivoli Storage Manager servers and administrators
- Your Tivoli Storage Manager server is large and heavily active.
- The Administration Center is to be used on a heavily active system.
- You plan to install Tivoli Monitoring for Tivoli Storage Manager. It is a requirement that the Tivoli Monitoring for Tivoli Storage Manager and the Administration Center are installed on the same system so that you can generate Tivoli Common Reporting reports.

Worksheet for planning details for the Administration Center

Use this worksheet to record information that you need to install the Administration Center.

Item	Description	Default value	Your value
Installation location	Specify the base directory path for the installation. Subdirectories are automatically created for the Administration Center itself, the Tivoli Integrated Portal application, and other components. You can create a new directory or install into an existing Tivoli Integrated Portal instance.	C:\IBM\tivoli\	
Tivoli Integrated Portal Migration	When upgrading from version 6.2.x, and earlier, you have the option to migrate your existing Tivoli Integrated Portal settings. These settings include information like server connections and Administration Center preferences. If you are also installing the Tivoli Common Reporting component, your configuration settings will be migrated.	No	
Upgrade	If the installer detects an earlier version of 6.3 on your system, you have the option of installing into an existing Tivoli Integrated Portal or to create a new instance. Note: When upgrading from version 6.2.x, and earlier, the Administration Center is installed as a new instance. Previous instances can be removed.	Install into an existing Tivoli Integrated Portal	
Tivoli Common Reporting	Use this optional feature to view historical reports for your Tivoli Storage Manager environment. Tip: To upgrade an existing Tivoli Common Reporting installation to the current version, select the following wizard options: <ul style="list-style-type: none"> • Install Tivoli Common Reporting 	Tivoli Common Reporting is not installed	
Cognos port number	If you install Tivoli Common Reporting, you must specify a port number for the IBM Cognos Content Database. The IBM Cognos Content Database is a relational database that contains data that IBM Cognos 8 needs to operate, such as report specifications, connection information for data sources, and information about scheduling and emailing reports.	Port number: 1527	
Client Performance Monitor	Use the Client Performance Monitor to view and analyze performance data for client backup and restore operations. The <i>time interval</i> setting specifies how long state information is kept for ongoing client operations. The <i>operation save time</i> setting specifies how long operational data is kept for historical reporting. Tip: To use this feature, some additional parameters must be specified in the client options file. For more information, see the <i>Using the Application Programming Interface</i> publication.	Port number: 5129 Time interval: 24 hours Operation save time: 14 days	

Installing and configuring the Administration Center

Item	Description	Default value	Your value
Administrator account information	<p>Create the user account that is used to manage access to the Administration Center. For example, you can log on with this user ID to create and manage additional administrative user accounts.</p> <p>Tip: If you are installing into an existing Tivoli Integrated Portal instance, you must specify an existing user account that has the iscadmins role assigned.</p> <p>For a new installation, you must also specify the port number that is used to access the Administration Center through a web browser.</p>	<p>Port number: 16310</p> <p>Password: No default value</p> <p>User ID: tipadmin</p>	

Installation directories

Administration Center components are installed into several directories. The components include Websphere, Tivoli Integrated Portal, Tivoli Common Reporting, and Administration Center.

The default installation directory for the Administration Center is: C:\IBM\tivoli. It contains the following directories:

- Tivoli Integrated Portal (C:\IBM\tivoli\tipv2)
- Tivoli Common Reporting (C:\IBM\tivoli\tipv2Components\TCRComponent)
- Administration Center (C:\IBM\tivoli\tsmac)

Installing the Administration Center components

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

Install the Tivoli Storage Manager Administration Center, using the installation software. The client performance monitor is installed as part of the Administration Center and more information about this is available within the 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://public.dhe.ibm.com/storage/tivoli-storage-management/maintenance/admincenter/>. Change to the directory where you placed the executable file and complete the following steps:

Important: The files are extracted to the current directory. Ensure that the executable file is in an empty directory. Do not extract the files into a directory where another Administration Center installation package or any other files are located.

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

6.3.3.0-TIV-TSMAC-*platform*.exe

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

3. Optional: After all the files are extracted, locate this file and run it to ensure that your system meets all requirements:

prereqcheck.exe

See “Running the installation prerequisite checker” on page 7 for details.

4. Ensure that there are no processes using *install_dir*/tipv2/java. To check, issue this command:

Use a process monitor or explorer tool.

5. Select one of the following ways to install the Administration Center:

Installation wizard

“Installing the Administration Center using the installation wizard” on page 190

Command-line console wizard

“Installing the Administration Center using the console installation wizard” on page 191

Silent mode

“Installing the Administration Center in silent mode” on page 192

6. After installing the Administration Center, configure and customize it for your use.

Running the installation prerequisite checker

The installation prerequisite checker is an optional tool that verifies the operating system, the amount of free disk space for the installation, and other prerequisites.

To ensure that your system environment is appropriate for the installation, you can run the prerequisite checker before each installation.

Tip: The prerequisite checker verifies only the minimum memory that is necessary. More memory is required for additional tasks.

The prerequisite checker presents a summary of results at the end of the check. Any changes that are required in your environment before the installation are listed. Any new directories that are required for the installation are created.

To run the prerequisite checker, complete the following steps.

1. Ensure that the appropriate installation package is downloaded and that its files are extracted. A prerequisite checker is part of the installation package.
2. Choose the graphical interface (the default) or console method to start the installation, and follow the wizard instructions to complete the installation:

- Issue this command to start the installation wizard using a graphical interface:

prereqcheck.exe

Or, double-click the prereqcheck.exe file.

- Issue this command to start the installation wizard using the console method:
- prereqcheck.exe -i console

3. Select the language for the prerequisite checker user interface.

Installing and configuring the Administration Center

4. In the welcome and disclaimer panels, review the statements and accept them.

If the Prerequisite Results page indicates that your system passed the checks, you are ready to start the installation.

If an error message is shown in the Prerequisite Results page, make the required corrections before continuing with the installation. The summary page lists the errors and directs you to an error log file.

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. Verify that the operating system is set to the language that you require. By default, the language of the operating system will be the language of the Administration Center and its installation wizard.

If you plan to select a different language for the wizard, you might have to change the language of the operating system. By setting the operating system to an ASCII language, such as English or Spanish, you can select an ASCII language for the wizard later in the installation process. By setting the operating system to a non-ASCII language, such as Simplified Chinese, you can select a non-ASCII language later in the installation process.

For information about setting the language of the operating system, see the operating system documentation.

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

```
install.exe
```

Or, double-click the `install.exe` file. The Administration Center installation wizard starts.

3. Select the language for your installation and follow the prompts. Tivoli Integrated Portal, the Administration Center, and the Client Performance Monitor are installed by default.

The default Tivoli Integrated Portal user name is `tipadmin`. You must specify a password for this ID, or for a new ID you create. You use the ID and password later to log on to the Tivoli Integrated Portal and the Administration Center.

Important: Save the user name and password or you are unable to uninstall the Administration Center. Refer to the Worksheet for planning details for the Administration Center to record the username and password.

At the end of the installation, a summary is provided. Make a note of the port number that is listed in the summary panel. It might be different from the one that you entered in the wizard, depending on port availability and your system requirements. You need this port to log on to the Administration Center.

Tip: A file named `Tivoli_Storage_Manager_Administration_Center.htm` is created in the `tsmac` directory of the Administration Center installation directory. Open this file in a web browser to automatically connect to the Administration Center. A desktop shortcut is also created for this file.

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

The directory that was chosen for installation. The default location is C:\IBM\tivoli. Look for the log.txt and logs.zip files.

To change the language of the Administration Center, change the language of the web browser. For a list of available languages for the Administration Center, see “Server language locales” on page 34.

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 these steps:

1. Verify that the operating system is set to the language that you require. By default, the language of the operating system will be the language of the Administration Center and its installation wizard.

If you plan to select a different language for the wizard, you might have to change the language of the operating system. By setting the operating system to an ASCII language, such as English or Spanish, you can select an ASCII language for the wizard later in the installation process. By setting the operating system to a non-ASCII language, such as Simplified Chinese, you can select a non-ASCII language later in the installation process.

For information about setting the language of the operating system, see the operating system documentation.

2. To start the wizard, enter this command:

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

3. Select the language for your installation and follow the prompts. Tivoli Integrated Portal, the Administration Center, and the Client Performance Monitor are installed by default.

The default Tivoli Integrated Portal user name is tipadmin. You must specify a password for this ID, or for a new ID you create. You use the ID and password later to log on to the Tivoli Integrated Portal and the Administration Center.

Important: Save the user name and password or you are unable to uninstall the Administration Center. Refer to the Worksheet for planning details for the Administration Center to record the username and password.

At the end of the installation, a summary is provided. Make a note of the port number that is listed in the summary panel. It might be different from the one that you entered in the wizard, depending on port availability and your system requirements. You need this port to log on to the Administration Center.

Tip: A file named Tivoli_Storage_Manager_Administration_Center.htm is created in the tsmac directory of the Administration Center installation directory. Open this file in a web browser to automatically connect to the Administration Center.

A desktop shortcut is also created for this file.

Installing and configuring the Administration Center

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

The directory that was chosen for installation. The default location is C:\IBM\tivoli. Look for the log.txt and logs.zip files.

To change the language of the Administration Center, change the language of the web browser. For a list of available languages for the Administration Center, see “Server language locales” on page 34.

Installing the Administration Center in silent mode

Use the silent installation option to automatically install the Administration Center and the optional Tivoli Common Reporting feature without any user interaction.

To run a silent installation, complete the following steps:

1. Create a response file. A sample response file named `sample_response.txt` is located in the Tivoli Storage Manager installation media root directory. Use this sample file as a template to create your response file.
2. To start a silent installation, enter the following command on a single line:
`install[.sh|.exe] -i silent -f full_path_name_to_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 33 for more details.

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

The directory that was chosen for installation. The default location is C:\IBM\tivoli. Look for the log.txt and logs.zip files.

Taking the first steps after you install the Administration Center

After installing the Administration Center, prepare for the post-installation tasks. These tasks include verifying the installation and starting the Administration Center.

Configure the Administration Center by completing the following tasks:

Configuring LDAP user authentication

To use a Lightweight Directory Access Protocol (LDAP) server to authenticate access to the Administration Center, you must complete some additional configuration tasks after you install the Administration Center.

Tips:

- If you use a non-root user account to install the Administration Center, you must manually start the Tivoli Integrated Portal server after you complete the installation. For more information, see “Starting and stopping the Tivoli Integrated Portal server” on page 196.
- Before you change the user authentication method, you must import the Secure Sockets Layer (SSL) certificate. For more information, see Configuring an SSL connection to an LDAP server.

To change the user authentication method from the local operating system to LDAP federated repositories, complete the following steps:

1. Open a web browser and log on to the Administration Center with a user account that has administrator privileges. To ensure that you are viewing all of the available tasks, click the **View** list in the upper left corner of the page and select **All tasks**.
2. Click **Settings > WebSphere Administrative Console > Launch WebSphere administrative console**.
3. In the WebSphere administrative console window, click **Security > Global security**.
4. From the **Available realm definitions** list, select **Federated Repositories** and click **Configure**.
5. Under **Related Items**, click **Manage repositories**.
6. Add the LDAP repository that you want to use for authentication by clicking **Add** and entering the following parameters:

Repository identifier

A unique identifier for the repository within the cell, for example: LDAP1.

Directory type

The type of server that you want to connect to.

Primary host name

The host name of the primary LDAP server. This host name is either an IP address or a domain name service (DNS) name.

Port The LDAP server port. The default value is 389, which is not a Secure Sockets Layer (SSL) connection. Port 636 can be an SSL connection. For some LDAP servers, you can specify a different port for non-SSL and SSL connections. If you do not know the port to use, contact your LDAP server administrator.

Bind distinguish name

The distinguished name (DN) for the application server to use when binding to the LDAP repository. If no name is specified, the application server binds anonymously. In most cases, bind DN and bind password are needed. However, when anonymous bind can satisfy all of the required functions, bind DN and bind password are unnecessary.

Bind password

The password that the application server uses when binding to the LDAP repository.

7. Click **OK**.
8. In the message box, click **Save directly to the master configuration**.
9. In the repository identifier column, click the identifier for the repository that you want to use.
10. On the configuration panel, under **Additional Properties**, click the LDAP entity types.
11. In the **Entity Type** column, click the link for Group, OrgContainer, and PersonAccount. Complete the search bases field. The search bases field specifies the search bases that are used to search this entity type. The search bases specified must be subtrees of the base entry in the repository. The following example search bases have o=ibm,c=us as the base entry in the repository:

Installing and configuring the Administration Center

o=ibm,c=us or cn=users,o=ibm,c=us or ou=austin,o=ibm,c=us

You can use a semicolon to delimit the search bases. For example:

ou=austin,o=ibm,c=us;ou=raleigh,o=ibm,c=us

12. Click **OK** and then click **Save to the master configuration**. You must save to the master configuration every time that you update the search bases field.
13. Return to the federated repositories page and click **Supported Entity Types** under **Additional Properties**.
14. In the **Entity type** column, click the link for Group, OrgContainer, and PersonAccount and complete the base entry for the default parent and **Relative Distinguished Name** properties fields.
 - a. In the Base entry for the default parent field, enter the same value that you entered in the Search bases field in step 11 on page 193.
 - b. In the **Relative Distinguished Name** properties field, enter the appropriate LDAP attribute name. In most cases, the values for this field are cn for Group, o;ou;dc;cn for OrgContainer, and uid for PersonAccount.
15. Click **OK** and then click **Save to the master configuration**. You must save to the master configuration every time that you update the base entry for the default parent field.
16. Return to the federated repositories page and click **Apply**, then click **Save to the master configuration**.
17. Under **Repositories in the realm**, click **Add base entry to Realm**.
18. On the repository reference page, select the repository that you created in step 6 on page 193 from the repository list.
19. Enter the distinguished name of a base entry that uniquely identifies the repository in the realm. You must enter the information in the **Distinguished name of a base entry uniquely identifying this set of entries in the realm** field. In most instances, this value is the same value that you entered in the **Search bases** field in step 11 on page 193.
20. In the **Distinguished name of a base entry in this repository** field, enter the distinguished name of the base entry within the repository. In most instances, this value is the same value that you entered in the **Distinguished name of a base entry that uniquely identifies this set of entries in the realm** field.
21. Click **OK** and then click **Save to the master configuration**. You must save to the master configuration every time that you update the distinguished name of a base entry. The base entry identifies the set of entries in the realm field. Two repositories are displayed under repositories in the realm on the federated repositories page: the repository you added, and a default repository.
22. Change the realm name or leave the value in the **Realm name** field as it is.
23. In the primary administrative user name field, enter the name of a user that you added in the repository. The named user is granted administrative privileges for the Tivoli Integrated Portal server.
24. Click the server identity that is stored in the repository.
25. In the server user ID or the administrative user node field, enter the ID that you entered in the primary administrative user name field. Enter the password for the user ID.
26. Select the default file repository that shows **File** in the **Repository type** column and remove it.
27. Click **OK** and then click **Save to the master configuration**.
28. Return to the secure administration, applications, and infrastructure page.

29. In the available realm definition list, select **Federated repositories** and click **Set as current**.
30. Click **Apply** and then click **Save to the master configuration**.
31. Stop and restart the Tivoli Integrated Portal server.

Configuring an SSL connection to an LDAP server

Your implementation of Tivoli Integrated Portal might use an external LDAP-based user repository. You can configure the Tivoli Integrated Portal to communicate over a secure sockets layer (SSL) channel.

This task assumes that you have an existing connection to an LDAP server setup.

Your LDAP server (for example, an IBM Tivoli Directory Server), must be configured to accept SSL connections and run on a secured port number (636). Refer to your LDAP server documentation if you must create a trusted certificate. The trusted certificate must be imported from your LDAP server into the Tivoli Integrated Portal Server key database file (cert.kdb).

Complete these steps to configure the Tivoli Integrated Portal Server to communicate over a secure SSL channel with an external LDAP server. All application server instances must be configured for the LDAP server.

1. Log in to the portal.
2. Follow these steps to import your LDAP server's trusted certificate into the application server key database file.
 - a. Click **Settings > Websphere Administrative Console**. Click **Launch Websphere administrative console**.
 - b. Click **Security > SSL certificate and key management**.
 - c. In the Related Items area, click **Key stores and certificates**.
 - d. In the table, click **NodeDefaultTrustStore**.
 - e. In the Additional Properties area, click **Signer certificates** link.
 - f. Click **Retrieve from port**.
 - g. In the relevant fields, provide the host name, the port, the SSL configuration details, and the alias of the certificate for your LDAP server and click **Retrieve signer information**. Then, click **OK**.
3. Complete the following steps to enable SSL communications to your LDAP server:
 - a. Click **Security > Secure administration, applications, and infrastructure**.
 - b. Select **Federated repositories** from the **Available realm definitions** menu list and click **Configure**.
 - c. Select your LDAP server from the **Repository** menu list.
 - d. Enable the **Require SSL communications** check box and the select the **Centrally managed** option.
 - e. Click **OK**.
4. For the changes to take effect, save, stop, and restart all Tivoli Integrated Portal Server instances.

Starting and stopping the Tivoli Integrated Portal server

Depending on your operating system, you might need to manually start the Tivoli Integrated Portal.

To manually start or stop the Tivoli Integrated Portal server, use a Tivoli Storage Manager administrative user ID that is defined to the Tivoli Integrated Portal. The administrative user ID must have the `iscadmins` role assigned. For details, see “Defining Administration Center users to the Tivoli Integrated Portal” on page 198.

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

Tip: If you connect to the Administration Center system using Terminal Services, and you do not have the optional Tivoli Common Reporting feature installed, use the Windows Services utility to start the Tivoli Integrated Portal server.

If you start the server from the command line, the server stops when you log off the Terminal Services session. If the Tivoli Common Reporting feature is installed, you must use the command line to start and stop the server.

To use the Windows Services utility, complete the following steps:

1. Open the utility by going to **Settings > Control Panel > Administrative Tools > Services**.
2. Select the following service:
 - Tivoli Integrated Portal - V2.1_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 HTTP port is 16310. The default HTTPS port is 16311. If you are using a port number other than the default, the secure port typically appears with 1 as the last number. See “Verifying the Administration Center installation” on page 197 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 Tivoli Integrated Portal installation directory.
The default for *TIP_HOME* is `C:\IBM\tivoli\tipv2`.
- *TCR_HOME* is the Tivoli Common Reporting installation directory.
The default for *TCR_HOME* is `C:\IBM\tivoli\tipv2Components\TCRComponent`.
- *tip_admin* is the administrator user ID for the Administration Center.
- *tip_pw* is the password for the administrator.
- *tip_profile* is the DB2 profile name for the administrator. The default is `TIPProfile`, as provided by Tivoli Integrated Portal.

Start or stop the Tivoli Integrated Portal server from the command line by using one of the following methods.

If Tivoli Common Reporting is installed:

Change to the *TCR_HOME*\bin directory and issue one of the following commands:

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- To start Tivoli Common Reporting and a Tivoli Integrated Portal server, issue this command:
`startTCRserver.cmd`
- To stop Tivoli Common Reporting and a Tivoli Integrated Portal server, issue this command:
`stopTCRserver.cmd tip_admin tip_pw`

If Tivoli Common Reporting is not installed:

Change to the *TIP_HOME\bin* directory and issue one of the following commands:

- To start a Tivoli Integrated Portal server, issue this command:
`startServer.bat server1`
- To stop a Tivoli Integrated Portal server, issue the following command on a single line:
`stopServer.bat server1 -username tip_admin -password tip_pw -profileName tip_profile`

Verifying the Administration Center installation

After you install the Administration Center, verify the installation by opening the Administration Center and logging in.

Complete the following steps:

1. If you used a non-root user account to install the Administration Center, start the Tivoli Integrated Portal server. For more information, see “Starting and stopping the Tivoli Integrated Portal server” on page 196.
2. Open the Administration Center by entering one of the following addresses in a supported web browser:

`http://workstation_name:non_secure_port/ibm/console`

Or:

`https://workstation_name:secure_port/ibm/console`

The *workstation_name* is the network name or IP address of the computer on which you installed the Administration Center. The *non_secure_port* is the HTTP port and the *secure_port* is the HTTPS port.

Attention: Use the port number that was shown in the summary panel of the installation wizard, which might be different from the port that you specified in the wizard. If you use an incorrect port, no warning messages are shown but you are not able to complete all Administration Center tasks.

The default HTTP port is 16310. The default HTTPS port is 16311. If you use a different port number from the default, the secure port typically appears as the non-secure port plus 1.

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

TIP_HOME\properties\TIPPortDef.properties

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where *TIP_HOME* is the home directory for the Tivoli Integrated Portal installation.

The default for *TIP_HOME* is C:\IBM\tivoli\tipv2.

Tips:

- If you use `http://workstation_name:16310/ibm/console` to connect to the Administration Center, you are automatically redirected to the secure port and address.
- A file named `Tivoli_Storage_Manager_Administration_Center.htm` is created in the `tsmac` directory of the Administration Center installation directory. Open this file in a web browser to automatically connect to the Administration Center.

A desktop shortcut is also created for this file.

3. 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 it is also needed to uninstall the Administration Center.
4. After you successfully log in, the Tivoli Integrated Portal welcome page is shown. 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.

Defining Administration Center users to the Tivoli Integrated Portal

When you install the 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. 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.

Tip: To add the appropriate roles for users to access the Tivoli Common Reporting reports, see `../com.ibm.itsm.tshoot.doc/ts_pdg_no_existing_group.dita`.

7. Click **Close**. The `TSM_AdminCenter` group is a shell for you to populate with users. You must manually enter the user credentials.
8. To ensure that an administrative user ID can start or stop the Tivoli Integrated Portal server, assign the `iscadmins` role to the administrative user ID.

9. Complete the form and click **Create**.

Resetting the Tivoli Integrated Portal installation wizard password

When the Tivoli Integrated Portal installation wizard password is unknown, you can reset it.

When you upgrade or uninstall the Administration Center, you need to use the *tipadmin* password. If the password is unknown, you must reset it.

Complete the following steps to reset the *tipadmin* password:

1. Log in to the operating system where the Administration Center is installed.
2. Open a command window and go to the *tip_home*\profiles\TIPProfile\bin directory.

The default *tip_home* is C:\IBM\tivoli\tipv2.

3. To access the wsadmin prompt, issue the following command:

```
wsadmin -conntype none -profileName TIPProfile
```

4. From the wsadmin command prompt, issue the following three commands to reset the password.

```
wsadmin>$AdminTask changeFileRegistryAccountPassword {-userId username
-p password newpassword}
wsadmin>$AdminConfig save
wsadmin>exit
```

The *username* is **tipadmin** and the *newpassword* is the new password you want to use for the tipadmin user ID.

5. For the new password to be recognized, you must restart the Tivoli Integrated Portal server. Go to the *tip_home*\profiles\TIPProfile\bin directory and issue the **stopServer** and **startServer** commands:

```
stopServer.bat server1
startServer.bat server1
```

Chapter 20. Uninstalling the Administration Center

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

Tip: To uninstall a version 6.2 Administration Center, see the instructions at the following website: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6r2>. To uninstall a version 6.1 Administration Center, see the instructions at the following website: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6>.

To uninstall the current version of the Administration Center using the standard method, complete the following steps:

1. Change to the installation directory. For example, the default directory is:
`C:\IBM\tivoli\tsmac_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.

- 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 current version of 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%`

Uninstalling the Administration Center

See Chapter 19, “Installing and configuring the Administration Center,” on page 179 for the installation steps to reinstall the Administration Center.

Chapter 21. Upgrading the Administration Center to Version 6.3 or later

To administer IBM Tivoli Storage Manager Version 6.3 or later servers, you must upgrade to the Administration Center Version 6.3 or later. The upgrade process consists of installing the new version and completing some manual configuration tasks.

If you are installing the Administration Center for the first time, see Chapter 19, “Installing and configuring the Administration Center,” on page 179.

The IBM Tivoli Integrated Portal is a graphical user interface (GUI) framework. The Administration Center is installed into the Tivoli Integrated Portal as a plug-in.

Restriction: The Administration Center Version 6.3 or later is compatible only with the Tivoli Integrated Portal Version 2.1. If you have earlier versions of these applications installed, you must upgrade them both.

You can automatically migrate your Tivoli Integrated Portal settings, like your server connections and user preferences, from a Version 6.2 Administration Center during the installation process. However, some manual configuration is still required after you complete the installation.

Tip: If there is enough disk space, consider temporarily maintaining both the previous and current versions of the Administration Center. This coexistence strategy provides a functioning Administration Center during the upgrade and ensures that the configuration settings of the previous version remain available.

To support coexistence, assign non-conflicting ports for each Administration Center instance. You can use the same port definitions and run only one instance at a time, or you can assign separate ports and run the two instances concurrently.

You can also install the Administration Center into an existing Tivoli Integrated Portal Version 2.1 instance. This option also applies to fix packs.

Previous versions of the Administration Center are not automatically removed during an upgrade installation. You can manually uninstall a previous version after you complete and verify the upgrade installation.

Related tasks:

Chapter 19, “Installing and configuring the Administration Center,” on page 179

Chapter 10, “Upgrading Tivoli Monitoring for Tivoli Storage Manager to Version 6.3, or later,” on page 143

Upgrading the Administration Center

To upgrade from a previous version of the Administration Center, you must install the new version and then recreate the previous Tivoli Integrated Portal or Integrated Solutions Console user accounts. In some cases, you must also recreate the previous Tivoli Storage Manager server connections.

When you upgrade the Administration Center to Version 6.3 or later, use the same user ID that was used to install the Version 6.2 Administration Center. If you use a different user ID to upgrade the Administration Center to Version 6.3 or later, you must change the ownership of the Version 6.2 Administration Center folders accordingly.

If you do not know your Tivoli Integrated Portal password, reset it by following these instructions: “Resetting the Tivoli Integrated Portal installation wizard password” on page 199.

To upgrade the Administration Center, complete the following steps:

1. If you do not plan to automatically migrate a Version 6.2 Administration Center during the installation process, obtain information about the previously defined Tivoli Storage Manager server connections:
 - For a version 5.5 or earlier Administration Center, save the `tsmservers.xml` file that is in the Administration Center installation directory.
 - For a Version 6.1 or later Administration Center, download the server connections file. From the navigation tree in the Administration Center interface, expand **Tivoli Storage Manager** and click **Manage Servers > Download Connection File**.
2. Collect the administrative user account information from the previous Administration Center. For more information, see “Obtaining user account information in a Version 5.5 Administration Center” on page 205 or “Obtaining user account information in a Version 6.1 or later Administration Center” on page 205.
3. Install the Administration Center Version 6.3 or later.

Important:

- If you have Tivoli Monitoring for Tivoli Storage Manager installed, the upgrade overwrites any existing reports and data source connections. Before you upgrade, see `../com.ibm.itsm.srv.doc/t_rpt_bkup_itm4tsm.dita` for instructions to export and import your customized BIRT and Cognos reports.
 - Extract the installation files into an empty directory. Do not extract to a directory that contains previously extracted files, or any other files.
4. Recreate the previous configuration in the new Administration Center:
 - a. Define each Integrated Solutions Console or Tivoli Integrated Portal user account. For more information, see “Defining Administration Center users to the Tivoli Integrated Portal” on page 206.
 - b. Edit the `tsmservers.xml` server connections file to specify the TIPRealm domain for each `iscuser` definition:

```
<iscuser id="TIPRealm/userID" />
```

- c. Upload the server connections file. From the navigation tree in the Administration Center interface, expand **Tivoli Storage Manager** and click **Manage Servers > Upload Connection File**.

When administrators log on to the Tivoli Integrated Portal, they are prompted to provide a Tivoli Storage Manager administrative user ID and password for the servers that they manage.

Tip: If administrators manage many Tivoli Storage Manager servers, they can edit the `tsmservers.xml` file and add the Tivoli Storage Manager administrative credentials.

Adding administrative credentials to the `tsmservers.xml` file prevents an administrator from having to provide the credentials after logging on to the Tivoli Integrated Portal, but including the passwords in the file can create a security exposure.

5. Optional: Uninstall the previous version of the Administration Center.
To uninstall a Version 6.2 Administration Center, see the instructions at the following website: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6r2>.
To uninstall a Version 6.1 Administration Center, see the instructions at the following website: <http://publib.boulder.ibm.com/infocenter/tsminfo/v6>.

Obtaining user account information in a Version 6.1 or later Administration Center

To access the Version 6.3 or later Administration Center, a Tivoli Integrated Portal user account is required. Tivoli Integrated Portal or Integrated Solutions Console user accounts that are defined in a previous version of the Administration Center must be manually recreated after upgrading to the latest version.

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

1. In the navigation tree, expand **Users and Groups** and click **Manage Users**.
2. In the **Search by** list, select **User ID**.
3. In the **Search for** list, enter an asterisk (*).
4. Click **Search**. The table shows all the defined user IDs. Capture this information for later use.
5. Determine the password for each of these user IDs.

Obtaining user account information in a Version 5.5 Administration Center

To access the Version 6.3 or later Administration Center, a Tivoli Integrated Portal user account is required. Integrated Solutions Console user accounts that are defined in a previous version of the Administration Center must be manually recreated after upgrading to the latest version.

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

1. In the navigation tree, expand **Console Settings** and click **User and Group Management**.
2. In the **Search** list, select **Users**.
3. In the **Search by** list, select **uid**.
4. In the **Search** field, enter an asterisk (*).

Upgrading the Administration Center

5. Click **Search**. The table shows all the defined user IDs. Capture this information for later use.
6. Determine the password for each of these user IDs.

Defining Administration Center users to the Tivoli Integrated Portal

When you upgrade the Administration Center to Version 6.3 or later, you must define the previous user accounts to the IBM Tivoli Integrated Portal.

Consider creating a separate Tivoli Integrated Portal user account for each Tivoli Storage Manager administrator. The administrators can then log on and use their Tivoli Storage Manager administrative credentials to create connections for the servers that they manage.

Complete the following steps to define the administrative user accounts:

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.

Tip: To add the appropriate roles for users to access the Tivoli Common Reporting reports, see `../com.ibm.itsm.tshoot.doc/ts_pdg_no_existing_group.dita`.

7. Click **Close**. The TSM_AdminCenter group is a shell for you to populate with users. You must manually enter the user credentials.
8. To ensure that an administrative user ID can start or stop the Tivoli Integrated Portal server, assign the `iscadmins` role to the administrative user ID.
9. Complete the form and click **Create**.

Server connections to the Administration Center

To use the Administration Center, administrators must create connections to one or more Tivoli Storage Manager servers. You can download a file that contains information about existing server connections from the Administration Center. You can then upload the file to quickly redefine server connections after an upgrade installation.

The Administration Center stores Tivoli Storage Manager server connection information in a file named `tsmservers.xml`. This file is located in the Administration Center installation directory.

When you install the Version 6.3 Administration Center you can choose to automatically migrate the configuration of an existing Version 6.2 Administration Center:

- If you select this option, the `tsmservers.xml` file is copied from the previous installation.
- If you do not select this option, or if you are upgrading an earlier version of the Administration Center, you can manually upload the connections file after you complete the installation.

By default, the `tsmservers.xml` file does not include Tivoli Storage Manager administrative user IDs and passwords for each server connection. Server connections that do not include these administrative credentials are treated as incomplete connections, which cannot be used until the credentials are provided.

After you upload the `tsmservers.xml` file, you can handle the incomplete server connections in two ways:

- Leave the connections in the incomplete state. When administrators log on to the Tivoli Integrated Portal, they are prompted to provide the administrative credentials for the servers that they manage.
- Use the **Change Password** action in the Manage Servers table to specify the administrative credentials for one or more server connections.

Tip: You can also edit the `tsmservers.xml` file directly and add the administrative credentials, if this is permitted by the security policies of your company. For more information, see the Administration Center online help for the Manage Servers page.

Part 5. Appendixes

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.

Table 34 shows 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 34. 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 general information about an installation. Review this log file when any installation failures occur.	This file is located in: the InstallAnywhere location that you specified. The InstallAnywhere exit codes show you the state of the installation. The codes are in the log.txt file and can also be called by command. You can retrieve the exit codes after the installation is completed. The exit codes are for both the Tivoli Storage Manager installation and upgrade wizards and the Tivoli Monitoring for Tivoli Storage Manager installation wizard. To use the command line, issue the following command: echo %ERRORLEVEL% See Table 35 on page 212 for all the InstallAnywhere exit codes.
logs.zip	The Tivoli Storage Manager server logs.zip file contains the following subdirectories: <ul style="list-style-type: none">• coi: contains installation log files• de: contains deployment engine log files• ia: contains the log.txt file and native installer log files, for example, tsm_server.log, tsm_license.log, and db2_inst.log	This file is located in: the InstallAnywhere location that you specified.
DE_Install.log	Contains information about the deployment engine installation. Review this log file if the deployment engine 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 34. 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

For information about exit codes for the Tivoli Storage Manager server, Administration Center, or Tivoli Monitoring for Tivoli Storage Manager wizards, see Table 35.

Tip: Some of the exit codes for a silent installation might be different than the exit codes for a GUI or console installation. For example, an exit code of 1 for a silent installation means that the installation completed successfully without warnings or errors. However, for a GUI or console installation, an exit code of 1 means that the installation completed, but that one or more of the actions from the installation sequence caused a warning or non-fatal error. See the *Problem Determination Guide* for the latest information.

Table 35. 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.
2003	An unresolved dependency in silent mode caused the installer to exit.

Table 35. InstallAnywhere exit codes (continued)

Code	Description
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 relauncher 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.

Servers upgraded from V6.1.0 or V6.1.1: On a system that is running the Tivoli Storage Manager V6.1.0 or V6.1.1 server program, an additional service named DB2 - DB2TSM1 - DB2TSM-0 is displayed in the list of services. When the V6.1.0 or V6.1.1 server program is upgraded to a later version, that service is renamed to DB2 - DB2TSM1 - DB2TSM. This service does not affect the operation of the Tivoli Storage Manager server instances that you configure. DB2TSM is a nonfunctional DB2 instance.

Appendix C. Accessibility features for the Tivoli Storage Manager product family

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The following list includes the major accessibility features in the Tivoli Storage Manager family of products:

- 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

If you install the IBM Tivoli Storage Manager Operations Center in console mode, the installation is fully accessible.

The accessibility features of the Operations Center are fully supported only in the Mozilla Firefox browser that is running on a Windows system.

The Tivoli Storage Manager Information Center, and its related publications, are accessibility-enabled. For information about the accessibility features of the information center, see the following topic: http://pic.dhe.ibm.com/infocenter/tsminfo/v6r3/topic/com.ibm.help.ic.doc/iehs36_accessibility.html.

Keyboard navigation

On Windows, the Tivoli Storage Manager product family follows Microsoft conventions for all keyboard navigation and access. Drag and Drop support is managed by using the Microsoft Windows Accessibility option known as *MouseKeys*. For more information about MouseKeys and other Windows accessibility options, see the Windows online help, citing the keyword "MouseKeys".

On other operating systems, these products follow the operating-system conventions for keyboard navigation and access.

Vendor software

The Tivoli Storage Manager product family 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.

IBM and accessibility

See the IBM Human Ability and Accessibility Center (<http://www.ibm.com/able>) for information about the commitment that IBM has to accessibility.

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You can view the glossary in the Tivoli Storage Manager information center at <http://pic.dhe.ibm.com/infocenter/tsminfo/v6r3>.

To view glossaries for other IBM products, see <http://www.ibm.com/software/globalization/terminology/>.

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