Planning and Installation Guide

Version 1  Release 3
Note!

Before using this information and the product it supports, be sure to read the general information under "Notices," on page 235.
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IBM® Tivoli® Storage Area Network Manager manages all of your devices on a storage area network (SAN). Capabilities include discovery, monitoring, availability, and event management. *IBM Tivoli Storage Area Network Manager User’s Guide* describes how to manage the resources on your storage area network.

This publication provides information to help you perform the following tasks:

- Plan for installing IBM Tivoli Storage Area Network Manager
- Install IBM Tivoli Storage Area Network Manager
- Configure IBM Tivoli Storage Area Network Manager

**Who should read this guide**

This publication includes instructions for storage area network (SAN) administrators and installers to plan for, install, and configure IBM Tivoli Storage Area Network Manager. Administrators and installers should be familiar with the following topics:

- General procedures for installing software on Windows®, AIX®, Linux, and Solaris.
- SAN concepts
- Database 2™ (DB2®)
- Tivoli NetView®
- Simple Network Management Protocol (SNMP) concepts
- Tivoli Enterprise Console®
- Tivoli Enterprise Data Warehouse

Once you install IBM Tivoli Storage Area Network Manager, you should read through *IBM Tivoli Storage Area Network Manager User’s Guide*. This will help you get started using the product.

**Publications**

This section lists publications in the IBM Tivoli Storage Area Network Manager library and any other related documents. It also describes how to access Tivoli publications online, how to order Tivoli publications, and how to submit comments on Tivoli publications.

**IBM Tivoli Storage Area Network Manager publications**

The following table lists IBM Tivoli Storage Area Network Manager publications.

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Storage Area Network Manager User’s Guide</td>
<td>SC23-4698</td>
</tr>
<tr>
<td>IBM Tivoli Storage Area Network Manager Planning and Installation Guide</td>
<td>SC23-4697</td>
</tr>
<tr>
<td>IBM Tivoli Storage Area Network Manager Messages</td>
<td>SC32-0953</td>
</tr>
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The Tivoli Storage Area Network Manager library in all translated languages is available on the following CD:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Storage Area Network Manager Publications CD-ROM</td>
<td>SCD7-0463</td>
</tr>
</tbody>
</table>

The publications are also available from the Tivoli publications Web site:  
http://publib.boulder.ibm.com/tividd/td/tdprodlist.html

Select IBM Tivoli Storage Area Network Manager.

**Related publications**

The following table lists related publications.

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Storage Area Network Manager: A Practical Introduction (Redbook)</td>
<td>SG24–6848</td>
</tr>
<tr>
<td>Introduction to Storage Area Network, SAN</td>
<td>SG24–5470</td>
</tr>
<tr>
<td>Designing an IBM Storage Area Network</td>
<td>SG24–5758</td>
</tr>
<tr>
<td>NetView for Windows NT® Programmer’s Reference</td>
<td>SC31–8890</td>
</tr>
<tr>
<td>IBM Tivoli Enterprise Console User’s Guide</td>
<td>GC32–0667</td>
</tr>
<tr>
<td>IBM DB2 Universal Database™ Quick Beginnings for DB2 Servers</td>
<td>GC09–4836</td>
</tr>
<tr>
<td>IBM Enterprise Storage Server®</td>
<td>SG24–5465</td>
</tr>
<tr>
<td>iSCSI: The Universal Storage Connection by John L. Hufferd</td>
<td></td>
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For information about Redbooks™, see  
http://www.redbooks.ibm.com/redbooks

The Tivoli Software Glossary includes definitions for many of the technical terms related to Tivoli software. The Tivoli Software Glossary is available, in English only, at the following Web site:

http://publib.boulder.ibm.com/tividd/glossary/termst04.htm

**Accessing publications online**

You can access publications in the Tivoli Information Center from the following Customer Support Web site:  
http://publib.boulder.ibm.com/tividd/td/tdprodlist.html

Select IBM Tivoli Storage Area Network Manager.

The Tivoli Information Center contains the most recent version of the books in the product library in PDF or HTML formats, or both. Translated documents are also available for some products.

**Note:** If you print PDF documents on other than letter-sized paper, select the Fit to page check box in the Adobe Acrobat Print dialog. This option is available when you click File + Print. Fit to page ensures that the full dimensions of a letter-sized page print on the paper that you are using.
Ordering publications

You can order many Tivoli publications online at the following Web site:


You can also order by telephone by calling one of these numbers:

- In the United States: 800–879–2755
- In Canada: 800–426–4968

In other countries, see the following Web site for a list of telephone numbers:

http://www.ibm.com/software/tivoli/order-lit/

Providing feedback about publications

If you have comments or suggestions about Tivoli products and documentation, send an e-mail to pubs@tivoli.com or complete the customer feedback survey at the following Web site:

http://www.ibm.com/software/tivoli/contact.html

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see Appendix E, “Accessibility,” on page 233.

Contacting customer support

For support for this or any Tivoli product, you can contact IBM customer support in one of the following ways:

- Visit the IBM Tivoli Storage Area Network Manager technical support Web site at http://www.ibm.com/software/support/

Customers in the United States can also call 1-800-IBM-SERV (1-800-426-7378).

International customers should consult the Web site for customer support telephone numbers.

You can also review the IBM Software Support Handbook, which is available on our Web site at http://techsupport.services.ibm.com/guides/handbook.html

When you contact customer support, be prepared to provide identification information for your company so that support personnel can readily assist you. Company identification information may also be needed to access various online services available on the Web site.
The support Web site offers extensive information, including a guide to support services (the IBM Software Support Handbook); frequently asked questions (FAQs); and documentation for all IBM Software products, including Release Notes, Redbooks, and Whitepapers. The documentation for some product releases is available in both PDF and HTML formats. Translated documents are also available for some product releases.

All Tivoli publications are available for electronic download or order from the IBM Publications Center: [http://www.ibm.com/software/tivoli/library/](http://www.ibm.com/software/tivoli/library/)

We are very interested in hearing about your experience with Tivoli products and documentation. We also welcome your suggestions for improvements. If you have comments or suggestions about our documentation, please complete our customer feedback survey at [http://www.ibm.com/software/sysmgmt/products/support/Tivoli_Escalation_Process.html](http://www.ibm.com/software/sysmgmt/products/support/Tivoli_Escalation_Process.html)

**Reporting a problem**

Please have the following information ready when you report a problem:

- The IBM Tivoli Storage Area Network Manager version, release, modification, and service level number.
- The communication protocol (for example, TCP/IP), version, and release number you are using.
- The activity you were doing when the problem occurred, listing the steps you followed before the problem occurred.
- The exact text of any error messages.

Depending on the problem, you may also want to provide the following information:

- The switch vendor, model, and firmware level.
- The HBA vendor, model, driver level, operating system it is running with.
- The storage device vendor, model, and code.

---

**Conventions used in this guide**

This book uses several conventions for special terms and actions, and operating system–dependent commands and paths.

**Typeface conventions**

The following typeface conventions are used in this book:

**Bold**

- Lowercase and mixed-case commands that appear with text
- Command options that appear with text
- Flags that appear with text
- Graphical user interface elements (except for titles of windows and dialogs)
- Names of keys

**Italic**

- Variables
- Values you must provide
- New terms
- Words and phrases that are emphasized
- Titles of documents
Monospace

- Commands and command options in examples
- Flags that appear on a separate line
- Code examples and output
- Message text
- Names of files and directories
- Text strings you must type, when they appear within text
- Names of Java™ methods and classes
- HTML and XML tags also appear like this, in monospace type

For syntax notation, these conventions are used:

- `<>` (less than, greater than symbols) are used to indicate a variable value. Do not type the `<>` symbols.
- `#` is the prompt for the root user.
- Uppercase and lowercase letters matter. Type in commands exactly as shown.
Summary of Changes for IBM Tivoli Storage Area Network Manager Version 1

This section summarizes changes that have been made to the product and this publication.


The following changes have been made to the product for this edition:

Cloudscape database support
The Cloudscape database is supported in this release. You can install IBM Tivoli Storage Area Network Manager with Cloudscape or you can install DB2 and IBM Tivoli Storage Area Network Manager without Cloudscape. Cloudscape is not intended to be used for large production databases; it is intended to be used for small SAN environments. You should use the Cloudscape database if you want a fast installation in a small SAN environment. Note that the IBM Tivoli Storage Area Network Manager Cloudscape database is not supported on Tivoli Enterprise Data Warehouse.

Database snapshot support
To help troubleshoot problems, IBM Tivoli Storage Area Network Manager supports a database snapshot. The database snapshot captures the current state of the SAN topology. You would use this function at the request of customer support.

Installation improvements
The user IDs and passwords required for installation of IBM Tivoli Storage Area Network Manager has been simplified. If you install the Cloudscape database, you can specify to use the same password as the WebSphere administrator password for the host authentication and Tivoli NetView passwords.

If you install the DB2 database, you can specify to use the same user ID and password as the DB2 administrator ID and password for the DB2 user and WebSphere user. You can also specify to use the same password as the DB2 administrator password for host authentication and Tivoli NetView.

Platform support
The manager is now supported on Windows 2003 and AIX 5.2 in addition to the currently supported operating systems: Windows 2000 and AIX 5.1.

The managed hosts are now supported on Solaris 2.9 in addition to the currently supported operating systems: Windows NT, Windows 2000, Windows 2003, AIX 5.1 or 5.2, Solaris 2.6 or 2.8, Linux Redhat Advanced Server version 2.1, or SuSE Linux Enterprise Server version 7.0.

The remote console is now supported on Windows 2003 in addition to the currently supported operating systems: Windows 2000 and Windows XP.

Zone control GUI
The zone control graphical user interface allows you to create, edit, and delete zones and zone sets within a SAN that is discovered by IBM Tivoli Storage Area Network Manager.
Launch device applications
If a device has an application that is recognized by IBM Tivoli Storage Area Network Manager, you can select that application through the Tivoli NetView SAN menu, then select Launch With (which replaces Launch Application). With version 1.2, you could only launch one application even though some devices supported more than one application. Version 1.3 allows you to choose which one to launch. For example, you can choose whether to launch Fabric Manager or Device Manager for a Cisco switch.

Cisco MDS 9000 switch
IBM Tivoli Storage Area Network Manager supports the Cisco MDS 9000 Family of switches. The Cisco switch introduces the concept of virtual SANs (VSANs).

NetView Web console support
IBM Tivoli Storage Area Network Manager now supports the NetView Web console in a limited capacity. The IBM Tivoli Storage Area Network Manager dialogs will not be added to the NetView Web console, therefore you will only be able to view the topology. There will be limited viewing of the topology (no property information will be available). For information on how to set up the Web console, see “Setting up the NetView Web console” on page 212.

Improved processing of Tivoli Enterprise Console events and SNMP traps
IBM Tivoli Storage Area Network Manager has improved the processing of Tivoli Enterprise Console events and SNMP traps. Previously, all events were issued without any kind of filtering. Users can now control the types of events to suppress or publish. Events that are redundant will automatically be suppressed.

DB2 version 8.1
IBM Tivoli Storage Area Network Manager is supported on DB2 version 8.1. However, the DB2 version shipped with IBM Tivoli Storage Area Network Manager is DB2 version 7.2 on the Tivoli Enterprise Data Warehouse CDs. For information on how to migrate DB2 version 7.2 to version 8.1, see Appendix C, “Migrating DB2 Version 7.2 to Version 8.1,” on page 195 and the following Web site for Quick Beginnings for DB2 Servers:

See Chapter 4: Migration Considerations in IBM DB2 Universal Database Quick Beginnings for DB2 Servers.

DB2 version 7.2
DB2 version 7.2 requires DB2 FixPak 10a. You must install this FixPak before you install IBM Tivoli Storage Area Network Manager. IBM Tivoli Storage Area Network Manager also supports those users on DB2 FixPak 9.

Technical Changes for Version 1 Release 2 – April 2003
The following changes have been made to the product for this edition:

Error detection and fault isolation (EDFI)
The EDFI function provides help with problem determination on Fibre Channel SAN interconnect links. EDFI uses predictive failure analysis and provides fault isolation capabilities that allow you to identify and take appropriate action for components that may be failing.

Embedded WebSphere® Application Server – Express, Version 5.0
Installation of IBM Tivoli Storage Area Network Manager includes the
embedded version of WebSphere Application Server – Express. A separate WebSphere installation is no longer required.

Internet SCSI (iSCSI) Support
Internet SCSI is a proposed industry–standard that enables host computer systems to perform block data input/output operations with a variety of devices. Target devices can include disk and tape devices, and optical storage devices. The Internet SCSI protocol defines a means to enable block storage applications over TCP/IP networks. You can discover devices that use the iSCSI storage networking protocol through Tivoli NetView.

AIX operating system support for the manager
IBM Tivoli Storage Area Network Manager (manager component) is supported on AIX 5.1. This support does not include Tivoli NetView support on AIX. If you want to see the GUI display for IBM Tivoli Storage Area Network Manager, you should install the remote console on Windows 2000 or Windows XP.

Remote Console Support on Windows XP
The IBM Tivoli Storage Area Network Manager remote console is now supported on Windows XP. Tivoli NetView 7.1.3 is required to support Windows XP.

Operating system support has been added for the managed hosts:
- Managed host on AIX 5.2
- Managed host on Linux Redhat Advanced Server version 2.1
- Managed host on SuSE Linux Enterprise Server 7.0

Operating system support has been dropped for the following component:
For managed hosts on AIX 4.3.3 (for version 1.1), support has been dropped. The release 1 managed host is still compatible with a release 2 manager.

Dynamic IP addresses for managed hosts and remote consoles
You can specify dynamic IP addresses instead of static IP addresses for managed hosts and remote consoles. The manager still requires a static IP address.

SAN identification
IBM Tivoli Storage Area Network Manager now displays the SAN name that an object is connected to.

Additional Tivoli Enterprise Console event classes
IBM Tivoli Storage Area Network Manager provides additional event classes for the Tivoli Enterprise Console that allow you to easily filter events based on the event type. See “Event classes and attributes for the Tivoli Enterprise Console” on page 218.

Cisco MDS 9000 Series switch support
IBM Tivoli Storage Area Network Manager has enhanced compatibility for the Cisco MDS 9000 Series switch. Tivoli NetView displays the port numbers in a format of SSPP, where SS is the slot number and PP is the port number. The Launch Application menu item is available for the Cisco switch. When the Launch Application is selected, the Cisco Fabric Manager application is started.

Agent versioning
An IBM Tivoli Storage Area Network Manager AIX 4.3.3 release 1 agent on a managed host can coexist with a release 2 manager. IBM Tivoli Storage Area Network Manager keeps track of the functionality differences between a release 1 agent and a release 2 agent and takes appropriate
action based on this information. You cannot have a release 1 agent and a release 2 agent on the same managed host (only one agent per managed host). The release 1 agent will not support new function (for example, EDFI or iSCSI).

**New icons for manual entry**
When manual entry is performed on unknown devices, the following icons will be available:
- ESS
- SAN Volume Controller

**Other changes**
- MQSeries has been removed from this release.
- Tivoli NetView is upgraded to version 7.1.3.
- JRE 1.3.0 has been upgraded to JRE 1.3.1.
- Silent installation of IBM Tivoli Storage Area Network Manager is supported. See Appendix A, “Silent installation of IBM Tivoli Storage Area Network Manager,” on page 179.
- The suspect state has been removed from the console. Previously, the suspect state was used to notify the user that the device had been in a critical state. The suspect state remained until the device returned to the critical state or the user cleared the state.
Chapter 1. Introducing IBM Tivoli Storage Area Network Manager

Tivoli Storage Area Network Manager helps you manage your resources by providing network resource discovery and management capabilities.

Figure 1 shows how Tivoli Storage Area Network Manager can manage all of your storage resources. This includes devices that are connected to host systems through fibre-based hubs, bridges, switches, routers, gateways, and directors. Tivoli Storage Area Network Manager can also manage any host with an agent that is not connected to the SAN.

With Tivoli Storage Area Network Manager, one system acts as the manager, and one or more other systems are the managed hosts:

Manager

The manager does the following:
- Gathers data from agents on managed hosts, such as descriptions of storage area networks (SANs), logical unit numbers (LUNs), and file system and host information.
- Provides graphical displays of SAN topology.
- Generates Simple Network Management Protocol (SNMP) events when a change is detected in the SAN fabric.
- Forwards events to the Tivoli Enterprise Console or an SNMP console.

Managed hosts

An agent resides on each managed host. The agents on managed hosts do the following:
- Gather information about the SAN by querying switches and devices for attribute and topology information.
- Gather host-level information, such as file systems and mapping to logical units (LUNs).
• Gather event information and other information detected by host bus adapters (HBAs).

**Storage area network management**

SAN management automatically discovers SAN components and devices, and the topology of your storage area network environment. You can monitor storage utilization on the SAN and determine the availability of SAN components.

**Discovery**

The process of finding resources within an enterprise, including detection of network topology, is called *discovery*. The data collected is stored in the Tivoli Storage Area Network Manager database. Tivoli Storage Area Network Manager uses the following two methods to discover your network:

**In-band**

The agent on each managed host collects information about the host system itself, including file system information. Commands are sent through the host bus adapter (HBA) cards attaching the host system to the SAN to gather information about the devices.

**Out-of-band**

The manager can also use SNMP queries to discover information about selected fabric switches. Management Information Base (MIB) information is collected from those switches.

Each method has its advantages:

• In-band
  – In-band compliant devices can discover and report errors for adjoining devices.
  – Agents can discover and manage the physical and logical connections from the switch to the fibre-attached disk.
  – Agents can discover and manage fibre-attached hosts through contact with their HBAs.

• Out-of-band
  – If a Fibre Channel (FC) path is down, the management server can still receive errors from the IP path.
  – Discovery is not affected by zoning. Zoning limits in-band requests from management agents to discovering only those endpoints within the zone.

There are two types of discovery: a full discovery and a topology discovery. Table 1 on page 3 explains when each type of discovery is performed.
Table 1. Discovery types

<table>
<thead>
<tr>
<th>Discovery Types</th>
<th>A discovery is performed when:</th>
</tr>
</thead>
</table>
| Full            | • A user requests a discovery (poll now)  
|                 | • A scheduled or periodic discovery is initiated  
|                 | • A managed host is added |

Depending on the number of objects to discover, a full discovery can take a long time to complete. You may choose never to run a full discovery.

You can specify when to run a full discovery. See the `srmpc ConfigService set` command in IBM Tivoli Storage Area Network Manager User’s Guide. The defaults are:

- IBM Tivoli Bonus Pack for SAN Management: Never run a full discovery.
- Tivoli Storage Area Network Manager: Run a full discovery when `Poll Now` is specified and also when a scheduled discovery starts.

| Topology          | • When IBM Tivoli Storage Area Network Manager starts  
|                   | • When IBM Tivoli Storage Area Network Manager detects changes in the SAN  
|                   | • When an SNMP agent (switch) is added |

This type of discovery takes less time to perform than a full discovery. However, a topology discovery does not update the host-centric or device-centric views. These views are updated when a full discovery is performed.

The data collected from managed hosts is stored in the DB2 database. Data collection is driven by both schedule and events. A schedule triggers discovery and defaults to every 24 hours. When Tivoli Storage Area Network Manager detects an event from a fabric switch, a new discovery begins.

IBM Tivoli Storage Area Network Manager also supports iSCSI discovery. iSCSI discovery is performed independently from the discovery done by IBM Tivoli Storage Area Network Manager and requires that you enable the IP discovery of Tivoli NetView. For more information, see “Internet SCSI support” on page 5.

Topology views

Tivoli Storage Area Network Manager extracts fabric information from the database and uses Tivoli NetView to display the fabric topology. Table 2 describes the views available for SANs. For each device discovered and displayed, open a properties dialog that shows the attributes and connections associated with that device.

Table 2. Description of SAN Views from Tivoli NetView

<table>
<thead>
<tr>
<th>SAN Views</th>
<th>Description</th>
</tr>
</thead>
</table>
| SAN Symbols (from Root Submap) | Displays one symbol for each SAN. Double-click on a SAN symbol to display its submap. From a submap you can choose either of the following views:  
|                             | • Topology View: Displays the entire SAN with two types of symbols, one for the SAN connection elements and another for each fabric segment.  
|                             | • Zone View: Displays the SAN as a grouping of zones.  
| Host-centric                | Displays all host systems and their logical relationships to local and SAN-attached devices. It does not display the switches and other connection devices.  
| Device-centric              | Displays all the storage devices and their logical relationships to all the hosts. It does not display the switches and other connection devices.  

Chapter 1. Introducing IBM Tivoli Storage Area Network Manager 3
SNMP events

Tivoli Storage Area Network Manager can send events, which represent a change in the state of the fabric, to any event console within the enterprise that Tivoli Storage Area Network Manager participates in. These events are generated in both SNMP and Tivoli Enterprise Console format.

Zones and zone control

A Storage Area Network zone is a grouping of multiple ports to form a virtual private storage network. A zone set is a collection of zones that belong to a single SAN. The IBM Tivoli NetView console lets you view zones in SANs. The IBM Tivoli Storage Area Network Manager user interface lets you create, update, and delete zones and zone sets within a SAN. In addition, the interface lets you do the following:

- Assign zones to zone sets.
- Activate and deactivate zone sets.
- View zone membership.
- Add and remove zone members.

For information about viewing zones on your SAN and the zone control user interface, see the IBM Tivoli Storage Area Network Manager User’s Guide.

Fault management

Fault management is also known as the error detection and fault isolation (EDFI) function. This is provided to help with problem determination on Fibre Channel SAN interconnect links. EDFI identifies faulty hardware by using a predictive failure analysis technique based on statistical modeling of the component failure distributions. EDFI looks at temporary error data across the SAN and analyzes it for patterns. Electrical and optical hardware often fails in such a way that intermittent conditions can be identified before they actually degrade into a permanent failure. Additionally, fault isolation is done to isolate the failing component. The goal is to identify the failing optics and interconnect components and notify users before a hard failure actually occurs. It is important that this notification gets resolved promptly. The component with the elevated temporary error rates should be replaced before it actually becomes a permanent failure. EDFI does not analyze errors for internal components such as power supplies. Its function is to analyze counters that are associated with the transmission of data on SAN links. EDFI gathers temporary error counters for the entire SAN and analyzes the frequency and location of the errors by using statistical methods.

The key to successfully using EDFI is to identify and remove the appropriate component before it fails permanently. Some reasons to remove a component before it actually fails are as follows:

- A high temporary error rate causes performance problems. In some cases, these can be quite severe.
- To wait for a hard failure means unscheduled replacement of equipment when the failure actually occurs. With EDFI, equipment replacement can be scheduled and performed in a less disruptive way to the applications processing data on the affected link.
- Some failures (fractured cables are a good example) might never show a permanent error. This condition leaves the system with a degraded link indefinitely.
• Host systems, storage systems, and SAN component error recovery procedures in response to intermittent repeatable errors can cause unpredictable changes in the system I/O or Fibre Channel SAN configuration (or both). This can affect system and storage availability.

Tivoli Storage Area Network Manager provides an EDFI user interface from the Tivoli NetView console that allows you to manage EDFI notifications and rule sets. EDFI generates standard Tivoli Enterprise Console events that you can use for reporting purposes. EDFI can report on failing hardware components before they become permanent hardware failures. EDFI reports on faulty components in the EDFI Properties log and as an EDFI symbol on the device itself on the SAN manager topology interface.

Rule sets contain specific thresholds and policies that are used by the predictive failure analysis and associated fault isolation functions of IBM Tivoli Storage Area Network Manager. Hardware products change frequently, and rule sets allow IBM Tivoli Storage Area Network Manager to keep up with all the information needed to perform EDFI operations. Rule sets can be copied to the appropriate directory and then displayed through IBM Tivoli Storage Area Network Manager dynamically. For more information about EDFI, see “Configuring IBM Tivoli Storage Area Network Manager for EDFI” on page 119.

Internet SCSI support

Tivoli Storage Area Network Manager provides basic support for iSCSI device discovery and monitoring through Tivoli NetView. iSCSI is a proposed industry-standard that allows SCSI block I/O protocols (commands, sequences and attributes) to be sent over a network using the TCP/IP protocol.

The SCSI architecture is based on a client/server model. Internet SCSI takes this model into account when providing storage requests over TCP/IP networks. The client (initiator) is typically a host system such as a file server that issues read or write requests. The server (target) is a resource such as a disk array that responds to client requests. The client is the initiator and issues commands. The server is a target that fulfills the requests. The initiators and targets are identified by their world wide unique iSCSI names.

The iSNS protocol is a complimentary IETF (Internet Engineering Task Force) storage management protocol for managing iSCSI devices. This protocol allows for storage devices and hosts to register themselves with an iSNS server. Subsequently, the hosts can either query the iSNS server or receive asynchronous updates from the iSNS server regarding the status of the storage devices.

The iSNS protocol permits the iSNS server functions to be implemented in a number of devices: Switches, routers, storage controllers, and management console nodes. The IBM Tivoli Storage Area Network Manager iSCSI support can be used either independently or in conjunction with the iSNS management framework. When iSNS is used in conjunction with IBM Tivoli Storage Area Network Manager, the loading of iSNS MIB files allows you to use the Tivoli NetView MIB browser. You can use the MIB browser to query the iSNS server and view the status of the iSCSI devices. For more information about iSCSI or iSNS, see the following Web site:

http://www.ietf.org
IBM Tivoli Storage Area Network Manager provides this support:

- All iSCSI devices discovered in the IP network can be placed in a unique iSCSI SmartSet. Also, the user can create separate SmartSets for iSCSI initiator devices and target devices.
- The utility that supports the iSCSI discovery is called the `nvsniffer` program. The `nvsniffer` program is provided by Tivoli NetView. The `nvsniffer` program uses a configuration file for the following:
  - To govern which services to discover.
  - To determine which service SmartSets to create.
  - To determine which ports to test for a given service.
  - To determine whether to use custom tests for discovering and checking the status for a service.
- The iSCSI MIBs and Internet Storage Name Service (iSNS) MIBs are placed in a directory. You can then load the MIBs into NetView through the NetView MIB loading function.
- The iSCSI MIB trap definition files are used by Tivoli NetView event processing (event filtering, forwarding, pager, e-mail, and custom actions).

**iSCSI discovery**

The iSCSI discovery is performed independently from the discovery done by IBM Tivoli Storage Area Network Manager. The iSCSI discovery is done through the `nvsniffer` program and can be scheduled to refresh the iSCSI SmartSets at specified intervals. If you run `nvsniffer` regularly, the program notices when a service has been down for seven consecutive days, and will automatically delete the service object.

You can start the iSCSI discovery through the Tivoli NetView menu. You can also start or stop the iSCSI discovery through the command-line interface. You can customize the schedule for the iSCSI discovery by using the Tivoli NetView `nvsniffer` command. For information on the `nvsniffer` command, see *IBM Tivoli Storage Area Network Manager User’s Guide*.

IBM Tivoli Storage Area Network Manager provides basic support for iSCSI device discovery and monitoring through Tivoli NetView. IBM Tivoli Storage Area Network Manager requires the following for iSCSI discovery:

- The device must have iSCSI MIB and SNMP support.
- The device should be configured so that the iSCSI MIB support is active. Some devices do not automatically activate iSCSI support (for example, iSCSI switch routers). Configuration can be done through the device’s configuration management interface.
- The iSCSI device must be discovered first as an IP device before `nvsniffer` can discover it as an iSCSI device.

The iSCSI device discovery requires that you enable the IP discovery of Tivoli NetView. The Tivoli NetView shipped with IBM Tivoli Storage Area Network Manager has disabled the IP discovery. For information about how to enable the IP discovery and start the iSCSI device discovery, see “Configuring IBM Tivoli Storage Area Network Manager for iSCSI discovery” on page 116.
New switch support

IBM Tivoli Storage Area Network Manager supports the Cisco MDS 9000 Family of fabric switches. IBM Tivoli Storage Area Network Manager supports these switches in the following way:

- A hierarchical view of virtual SANs (VSANs) is displayed. A VSAN is a complete logical fabric that includes its own set of FC–GS–3 fabric services (management service and name server). VSANs allow multiple logical SANs over a common physical infrastructure. To support Cisco’s VSAN concept, IBM Tivoli Storage Area Network Manager inserts a new level in our view hierarchy to show VSANs within a Cisco physical infrastructure. Once this physical infrastructure has been discovered, it will not be removed unless all physical and virtual switches within that physical infrastructure are missing and a clear history is performed.


For more information about the Cisco MDS 9000 family of switches and VSAN, see:

http://www.cisco.com/univercd/home/home.htm

Interfaces to Tivoli Storage Area Network Manager

This section describes the type of interfaces available with Tivoli Storage Area Network Manager.

- IBM Tivoli Storage Area Network Manager console
  IBM Tivoli Storage Area Network Manager uses Tivoli NetView to display the fabric topology and view events in the event database.

- Command-line interface
  You can use the command-line interface to issue logging commands, manager service commands, or when you create scripts that submit commands. See IBM Tivoli Storage Area Network Manager User’s Guide for more information about logging commands and manager service commands.

Integrating IBM Tivoli Storage Area Network Manager into an SNMP management solution

Tivoli Storage Area Network Manager is designed to be part of an integrated SNMP management solution. If you are already implementing an SNMP solution for your storage network, Tivoli Storage Area Network Manager will integrate and add value to that solution. If you have not yet established an SNMP solution, Tivoli NetView can serve as your SNMP management console.

For more information about configuration, see Chapter 9, “Configuring IBM Tivoli Storage Area Network Manager,” on page 103.
Chapter 2. Planning for installation

Important

Before installing IBM Tivoli Storage Area Network Manager, make sure that your SAN is operational. IBM Tivoli Storage Area Network Manager cannot run on a SAN that is not operating. Check the following:

- You have installed the appropriate HBA (host bus adapter) cards and device drivers (for example, the QLogic HBA and device drivers). For EDFI, the phase 2 common HBA API must be installed on the managed host. This is required to gather port statistics. For a device compatibility list, see the following Web address:


  Select Device Compatibility Table.

- Make sure that the device driver package for your HBA has installed support for the common HBA API. If it does have support for the common HBA API, make sure that you have run a separate install program for it. Contact your HBA manufacturer if you are unsure.

- The IBM Tivoli Storage Area Network Manager (manager component and remote consoles) and all managed hosts must have fully qualified host names. The manager component must have a static IP address.

- Your network must use DNS.

- It is strongly recommended that EDFI be disabled during SAN hardware installation and reconfiguration. This will prevent false error events from appearing in the EDFI properties logs as well as the NetView icons.

Note:

- IBM Tivoli Storage Area Network Manager only supports user IDs that are defined locally on the computer. This includes the user IDs for DB2, Tivoli NetView, and the manager.

- Before installing IBM Tivoli Storage Area Network Manager, see this Web site for any Flash documents:


  Select IBM Tivoli Storage Area Network Manager from the Support by product drop–down list. Then select Support Flashes.

- There are three product CDs:
  - First CD – contains the manager
  - Second CD – contains the remote console
  - Third CD – contains the agents

  There also is a National Language Pack CD for IBM Tivoli Storage Area Network Manager.

- If you are using DB2 as your database, the DB2 program is located on the Tivoli Enterprise Data Warehouse CD.

- IBM Tivoli Storage Area Network Manager consists of two products:
IBM Tivoli Bonus Pack for SAN Management which supports a 64-switch port limit for the SANs. To upgrade to the full product, see “Upgrading the Bonus Pack for SAN Management” on page 125.

IBM Tivoli Storage Area Network Manager is the full product which supports more than 64 ports on the SAN.

- Before installing IBM Tivoli Storage Area Network Manager, see the README files on the product CD. The README files are in the readme directory. The files are:
  readme_itsanm_language.txt

Where language can be as follows:
- en – English
- de – German
- es – Spanish
- fr – French
- it – Italian
- ja – Japanese
- ko – Korean
- pt_BR – Brazilian Portuguese
- zh_CN – Simplified Chinese
- zh_TW – Traditional Chinese

- You cannot use the Windows Terminal Services to access a machine that is running the IBM Tivoli Storage Area Network Manager console (either the manager or remote console machine). Any IBM Tivoli Storage Area Network Manager dialogs launched from the SAN menu in Tivoli NetView will appear on the manager or remote console machine only. The dialogs will not appear in the Windows Terminal Services session.

- Cloudscape is not intended to be used for large production databases; it is intended to be used for small SAN environments. You should use the Cloudscape database if you want a fast installation in a small SAN environment. Note that the IBM Tivoli Storage Area Network Manager Cloudscape database is not supported on Tivoli Enterprise Data Warehouse.

System requirements for Tivoli Storage Area Network Manager

This section provides information about the hardware and software requirements for Tivoli Storage Area Network Manager.

Storage requirements

The storage requirements for IBM Tivoli Storage Area Network Manager is as follows:

Table 3. Storage requirements for IBM Tivoli Storage Area Network Manager

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk space</th>
<th>RAM</th>
<th>Virtual memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager (Windows 2000 or 2003)</td>
<td>1 GB, temporary disk space of 350 MB to install (this includes Tivoli NetView)</td>
<td>1 GB</td>
<td>2 GB</td>
</tr>
</tbody>
</table>
Table 3. Storage requirements for IBM Tivoli Storage Area Network Manager (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Disk space</th>
<th>RAM</th>
<th>Virtual memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager (AIX)</td>
<td>200 MB on a temporary directory, 200 MB on the installation directory, and 30 MB on the home directory (/home)</td>
<td>1 GB</td>
<td>2 GB</td>
</tr>
<tr>
<td>Agent</td>
<td>200 MB, the agent also requires temporary disk space of 100 MB to install</td>
<td>256 MB</td>
<td>512 MB</td>
</tr>
<tr>
<td>IBM Tivoli Storage Area Network Manager remote console</td>
<td>1024 MB</td>
<td>512 MB</td>
<td>1024 MB</td>
</tr>
</tbody>
</table>

If you are using DB2 as your database, the minimum storage required for this product is as follows:

Table 4. Disk space required for installation of DB2

<table>
<thead>
<tr>
<th>Product</th>
<th>Disk space</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>400 MB</td>
</tr>
</tbody>
</table>

Manager requirements (Windows 2000 or 2003)

The Windows 2000 or 2003 manager requirements include:

- A dedicated machine (DB2 and manager on the same machine and only runs IBM Tivoli Storage Area Network Manager).
- Machine: Pentium® III 1 GHz Processor (minimum).
- Disk space and memory requirements: see “Storage requirements” on page 10
- Operating System:
  - Microsoft® Windows 2000 operating system Server, Advanced Server, or Professional with Service Pack 3

You must also have the SNMP service installed and make sure that the SNMP community name is public.

- Database 2 (DB2) Universal Database (UDB) or Cloudscape. If you are using Cloudscape as your database, it will be installed when you install IBM Tivoli Storage Area Network Manager. If you are using DB2 as your database, you must install DB2 on the manager machine before you install IBM Tivoli Storage Area Network Manager. The DB2 UDB Enterprise Edition Version 7.2 server must have FixPak 10a installed. IBM Tivoli Storage Area Network Manager also supports those users on DB2 FixPak 9. The DB2 CDs are shipped on the Tivoli Enterprise Data Warehouse CDs.
- Tivoli NetView version 7.1.3 (installed with IBM Tivoli Storage Area Network Manager). If you have a version of Tivoli NetView that is below version 7.1.1, then you must manually uninstall it before installing IBM Tivoli Storage Area Network Manager.
• An NTFS file system must be used for the installation directory.
• The video resolution must be 1024x768 with 256 colors or higher.

Manager requirements (AIX)

The AIX manager requirements include:
• A dedicated machine (DB2 and manager on the same machine and only runs IBM Tivoli Storage Area Network Manager).
• Machine: AIX RS/6000 at 375 MHz (minimum).
• Disk space and memory requirements: see “Storage requirements” on page 10.
• Operating System: AIX 5.1 or 5.2. You must also have operating system patches to support JRE 1.3.1.

If you are running AIX 5.1, you must download the AIX 5100–05 Recommended Maintenance Level. If you are running AIX 5.2, you must download the AIX 5200–02 Recommended Maintenance Level. You can download this package from the following Web site:

http://techsupport.services.ibm.com/server/aix.fdc

Then do the following:
1. Click **Download maintenance packages**.
2. Under the heading Base OS, select **AIX 5.1** or **AIX 5.2**.
3. Under the heading Current level, select the current level of your system.
4. Under the heading Desired level, select **5100–05** or **5200–02**.
5. Click **Get package**.

• Database 2 (DB2) Universal Database (UDB) or Cloudscape. If you are using Cloudscape as your database, it will be installed when you install IBM Tivoli Storage Area Network Manager. If you are using DB2 as your database, you must install DB2 on the manager machine before you install IBM Tivoli Storage Area Network Manager. The DB2 UDB Enterprise Edition Version 7.2 server must have FixPak 10a installed. IBM Tivoli Storage Area Network Manager also supports those users on DB2 FixPak 9. The DB2 CDs are shipped on the Tivoli Enterprise Data Warehouse CDs.

Tivoli NetView is not installed or supported on the AIX manager. The remote console is supported on Windows 2000, 2003, and XP.

IBM Tivoli Storage Area Network Manager remote console requirements

The remote console requires the following:
• Machine: Pentium III 450 MHz processor.
• Disk space and memory requirements: see “Storage requirements” on page 10.
• Operating system:
  – Windows XP.
• The SNMP service must be installed, and the SNMP community name of **Public** must be defined.
• An NTFS file system must be used for the installation directory.
• The video resolution must be 1024x768 with 256 colors (or higher).
The remote IBM Tivoli Storage Area Network Manager console cannot be installed on the manager server (the console is installed with the manager). However, it can be installed on a managed host.

Agent requirements
This section provides information about requirements for the agents on different operating systems.

Windows agent
The requirements for the Windows agent include:

- Machine: Pentium III 400 MHz processor.
- Disk space and memory requirements: see “Storage requirements” on page 10.
- Operating system – one of the following:
  - Windows NT 4.0 (with Service Pack 6A)
  - Windows 2000: Professional, Server, or Advanced Server (each with Service Pack 3)
  - Windows 2003
- Appropriate HBA and level. See the following Web site:

Select IBM Tivoli Storage Area Network Manager from the Support by product drop-down list.

AIX agent
The requirements for the AIX agent include:

- Machine: Minimum 43P–150 375 MHz processor.
- Disk space and memory requirements: see “Storage requirements” on page 10.
- Operating System: AIX 5.1 or 5.2. You must also have operating system patches to support JRE 1.3.1.

If you are running AIX 5.1, you must download the AIX 5100–05 Recommended Maintenance Level. If you are running AIX 5.2, you must download the AIX 5200–02 Recommended Maintenance Level. You can download this package from the following Web site:
  http://techsupport.services.ibm.com/server/aix.fdc

Then do the following:

1. Click Download maintenance packages.
2. Under the heading Base OS, select AIX 5.1 or AIX 5.2.
3. Under the heading Current level, select the current level of your system.
4. Under the heading Desired level, select 5100–05 or 5200–02.
5. Click Get package.

- Appropriate HBA and level. See the following Web site:

Select IBM Tivoli Storage Area Network Manager from the Support by product drop-down list.

Solaris agent
The requirements for the Solaris agent include:

- Machine: Minimum Ultra 5S 360 MHz processor.
- Disk space and memory requirements: see “Storage requirements” on page 10.
• Operating System: Solaris Operating Environment 2.6, 2.8, or 2.9. This operating environment is referred to as Solaris. Must have operating system patches to support JRE 1.3.1.
  For information about the operating system patches, see:
  [http://java.sun.com/j2se/1.3/install-solaris-patches.html](http://java.sun.com/j2se/1.3/install-solaris-patches.html)
• Appropriate HBA and level. See the following Web site:

Select IBM Tivoli Storage Area Network Manager from the Support by product drop-down list.

**Linux agent**
The requirements for the Linux agent include:
• Machine: Pentium III with a 400 MHz processor.
• Disk space and memory requirements: see “Storage requirements” on page 10.
• Operating system, one of the following:
  – Linux Redhat Advanced Server version 2.1 (32 bits) with 2.4.9 Kernel.
  – SuSE Linux Enterprise Server version 7.0 (32 bits) with 2.4.7 Kernel.
• Appropriate HBA and level. See the following Web site:

Select IBM Tivoli Storage Area Network Manager from the Support by product drop-down list.

**Compatibility considerations**
If you have an IBM Tivoli Storage Area Network Manager version 1.3 manager, it will manage the version 1.1 or 1.2 agent.

**Limitations**
Check the following Web site for IBM Tivoli Storage Area Network Manager limitations:

Check Hints and Tips or Solutions.

Some limitations to note are:
• Switches that are being managed out-of-band such as SNMP agents should be configured to use the SNMP V1 protocol. Some switches use SNMP V2 or V3 by default and must be reconfigured before they can work correctly with IBM Tivoli Storage Area Network Manager. Refer to the switch vendor documentation for specific configuration details.
• The event scanner no longer runs on the QLogic QLA2200 HBA. This means that the agent will not notify the manager of events gathered in-band for that fabric. The switches can be configured to send out-of-band events to the manager for the fabric instead.

**Other support**
IBM Tivoli Storage Area Network Manager automatically installs and uses the components listed.
- Tivoli NetView (automatically installed with the Windows manager and remote console)
- IBM JRE 1.3.1 (automatically installed with the manager, managed hosts, and remote console). This JRE is not used as the system default; this JRE is used only for IBM Tivoli Storage Area Network Manager.

If you plan to send IBM Tivoli Storage Area Network Manager events to a receiver, you must have programming support for at least one of the following:
- SNMP
- The Tivoli Enterprise Console

**SAN environment**

The managed hosts must share a common storage area network connection to shared storage devices. A SAN host bus adapter (HBA) and appropriate SAN device drivers also are required on each managed host. All of the managed hosts and devices do not need to be connected to a single common SAN. That is, one set of managed hosts and devices can be connected to one SAN, and a separate set can be connected to a second SAN. Tivoli Storage Area Network Manager can monitor both of these SANs.

For information on the devices and SAN environment that are supported, see the following Web site:


Select IBM Tivoli Storage Area Network Manager from the product drop-down list.

**Overview of the installation steps to install IBM Tivoli Storage Area Network Manager**

You will be installing these components for IBM Tivoli Storage Area Network Manager. See Table 5.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Where installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager (Windows 2000 or 2003)</td>
<td>Manager component of Tivoli Storage Area Network Manager. This component includes Tivoli NetView and IBM Tivoli Storage Area Network Manager console.</td>
<td>Dedicated manager computer.</td>
</tr>
<tr>
<td>Manager (AIX)</td>
<td>Manager component of Tivoli Storage Area Network Manager.</td>
<td>Dedicated manager computer.</td>
</tr>
<tr>
<td>Agent</td>
<td>The agent performs in-band discovery on a host attached to the SAN.</td>
<td>This component can be installed on the manager computer or a different computer.</td>
</tr>
</tbody>
</table>

**Table 5. Components of Tivoli Storage Area Network Manager**
Table 5. Components of Tivoli Storage Area Network Manager (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Where installed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote IBM Tivoli Storage Area Network Manager console</td>
<td>This is optional. If you have installed the remote IBM Tivoli Storage Area Network Manager console on a computer, you cannot install the manager on this computer.</td>
<td>A computer other than the manager.</td>
</tr>
</tbody>
</table>

Installation steps for a Windows manager

The basic installation steps for a Windows manager are as follows:

1. If you are using Cloudscape as the database, you do not have to install DB2. Follow the steps in "Step 5: Install the SNMP service" on page 28. Then go to the next step.
   
   If you are using DB2 as the database, follow the steps in Chapter 3, "Preparing for installation (Windows manager)," on page 19. This section provides information that is required by IBM Tivoli Storage Area Network Manager. If you do not have DB2 version 7.2 with FixPak 10a installed, this section provides information on installing DB2. This section also provides information on how to install the SNMP service.

2. Follow the steps in Chapter 4, "Installing the Windows manager," on page 31. This section provides information on how to install IBM Tivoli Storage Area Network Manager on the manager computer.

3. Follow the steps in Chapter 7, "Installing the agent on the managed host," on page 81. This section provides information on how to install the agent on the managed host. If you want to install the agent on different computers, you must run the installation program on each computer.

4. This is an optional step if you want to install a remote IBM Tivoli Storage Area Network Manager console. Follow the steps in Chapter 8, "Installing the remote console," on page 91. If you want to install the remote IBM Tivoli Storage Area Network Manager console on different computers, you must run the installation program on each computer.

5. Configure IBM Tivoli Storage Area Network Manager. See Chapter 9, "Configuring IBM Tivoli Storage Area Network Manager," on page 103.

6. Install the IBM Tivoli Storage Area Network Manager Language Pack. This is an optional step. See Chapter 11, "Installing the Language Pack," on page 145.

If you want to uninstall IBM Tivoli Storage Area Network Manager, see Chapter 12, "Uninstalling IBM Tivoli Storage Area Network Manager," on page 161.

Installation steps for an AIX manager

The basic installation steps for an AIX manager are as follows:

1. If you are using Cloudscape as the database, you do not have to install DB2 and can go to the next step.
   
   If you are using DB2 as the IBM Tivoli Storage Area Network Manager database, follow the steps in Chapter 5, "Preparing for installation (AIX manager)," on page 51. This section provides information that is required by IBM Tivoli Storage Area Network Manager. If you do not have DB2 version 7.2 with FixPak 10a installed, this section provides information on installing DB2.
2. Follow the steps in Chapter 6, “Installing the AIX manager,” on page 75. This section provides information on how to install IBM Tivoli Storage Area Network Manager on the manager computer.

3. Follow the steps in Chapter 7, “Installing the agent on the managed host,” on page 81. This section provides information on how to install the agent on the managed host. If you want to install the agent on different computers, you must run the installation program on each computer.

4. Install a remote IBM Tivoli Storage Area Network Manager console. Follow the steps in Chapter 8, “Installing the remote console,” on page 91. If you want to install the remote IBM Tivoli Storage Area Network Manager console on different computers, you must run the installation program on each computer.

5. Configure IBM Tivoli Storage Area Network Manager. See Chapter 9, “Configuring IBM Tivoli Storage Area Network Manager,” on page 103.

6. Install the IBM Tivoli Storage Area Network Manager Language Pack. This is an optional step. See Chapter 11, “Installing the Language Pack,” on page 145.

If you want to uninstall IBM Tivoli Storage Area Network Manager, see Chapter 12, “Uninstalling IBM Tivoli Storage Area Network Manager,” on page 161.

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**Upgrading IBM Tivoli Storage Area Network Manager**

To upgrade IBM Tivoli Storage Area Network Manager version 1.2.0, 1.2.1 or 1.2.2 to version 1.3, follow the procedure in Chapter 10, “Upgrading IBM Tivoli Storage Area Network Manager,” on page 125. An upgrade from version 1.1 to 1.3 is not supported. To upgrade from version 1.1 to 1.3, you can perform one of the following steps:

- Uninstall version 1.1 and then install version 1.3.
- Upgrade from version 1.1 to 1.2, then upgrade from 1.2 to 1.3.

To upgrade the Bonus Pack to the full product, see “Upgrading the Bonus Pack for SAN Management” on page 125.

To upgrade the Try and Buy product to the full product, see “Upgrading the Try and Buy license” on page 125.
Chapter 3. Preparing for installation (Windows manager)

Before you can install IBM Tivoli Storage Area Network Manager, there are several steps to complete. The sections below describe those steps.

Step 1: Check for required items

IBM Tivoli Storage Area Network Manager requires specific programs and services to be installed before you can successfully install it. Table 6 provides a list of programs and information that are required by IBM Tivoli Storage Area Network Manager (manager). Table 7 on page 20 provides a list of the programs and information required for the remote console installation. Table 8 on page 20 provides a list of information that is required for the managed host installation.

Table 6. Programs and information required for Windows manager installation

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Static IP address on the manager. To check for a static IP address, see “Checking for a static IP address” on page 209.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fully qualified host name of the manager computer. To check for a fully qualified host name, see “Checking for a fully qualified host name” on page 206. Host names are case-sensitive (this is a WebSphere limitation).</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DB2 administrator ID and password</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>DB2 Version 7.2 with FixPak 10a installed. If this program is not installed, see “Step 4: Install DB2” on page 22.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A range of eight port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers are 9550 to 9557.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The default port numbers are used as follows:</td>
<td></td>
</tr>
<tr>
<td>9550</td>
<td>HTTP port.</td>
<td></td>
</tr>
<tr>
<td>9551</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>9552</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>9553</td>
<td>Cloudscape server port.</td>
<td></td>
</tr>
<tr>
<td>9554</td>
<td>NVDAEMON port.</td>
<td></td>
</tr>
<tr>
<td>9555</td>
<td>NVREQUESTER port.</td>
<td></td>
</tr>
<tr>
<td>9556</td>
<td>SNMPTrapPort port on which to get events forwarded from Tivoli NetView.</td>
<td></td>
</tr>
<tr>
<td>9557</td>
<td>Reserved.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Tivoli NetView version 7.1.3. If this program is not installed, IBM Tivoli Storage Area Network Manager automatically installs this program. If Tivoli NetView version 7.1.3 is installed, the installation program configures Tivoli NetView. If Tivoli NetView version 7.1.1 is installed, then it will be upgraded to 7.1.3.</td>
<td></td>
</tr>
</tbody>
</table>
Table 6. Programs and information required for Windows manager installation (continued)

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>SNMP Service. To install the SNMP Service, see “Step 5: Install the SNMP service” on page 28.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Task Scheduler service (Windows 2000). This service lists scheduled commands or schedules commands and programs to run on a computer at a specified time and date. This service is installed automatically when you install Windows.</td>
<td></td>
</tr>
</tbody>
</table>

Table 7. Programs and information required for remote console installation

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tivoli NetView version 7.1.3. If this program is not installed, IBM Tivoli Storage Area Network Manager automatically installs this program. If Tivoli NetView version 7.1.3 is installed, the installation program configures Tivoli NetView. If Tivoli NetView version 7.1.1 is installed, then it will be upgraded to 7.1.3.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SNMP Service. To install the SNMP Service, see “Step 5: Install the SNMP service” on page 28.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Task Scheduler service (Windows 2000). This service lists scheduled commands or schedules commands and programs to run on a computer at a specified time and date. This service is installed automatically when you install Windows.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Manager fully qualified host name and port number. To check for the fully qualified host name, see “Checking for a fully qualified host name” on page 206.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A range of six port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers used are 9560 to 9565. The default port numbers are used as follows: 9560 HTTP port. 9561 Reserved. 9562 Tomcat’s Local Server Port. 9563 Tomcat’s warp port. 9564 NVDAEOM port. 9565 NVRREQUESTER port.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Host authentication password</td>
<td></td>
</tr>
</tbody>
</table>

Table 8. Programs and information required for agent installation on the managed host

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manager fully qualified host name and port number. To check for the fully qualified host name, see “Checking for a fully qualified host name” on page 206.</td>
<td></td>
</tr>
</tbody>
</table>
Table 8. Programs and information required for agent installation on the managed host (continued)

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>A range of four port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers are 9570 to 9573.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The default port numbers are used as follows:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9570</td>
<td>HTTP port.</td>
</tr>
<tr>
<td></td>
<td>9571</td>
<td>Reserved.</td>
</tr>
<tr>
<td></td>
<td>9572</td>
<td>Tomcat’s Local Server Port.</td>
</tr>
<tr>
<td></td>
<td>9573</td>
<td>Tomcat’s warp port.</td>
</tr>
<tr>
<td>3</td>
<td>Must have current operating system patches to support JRE 1.3.1. JRE 1.3.1 is installed by the installation program.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Host authentication password</td>
<td></td>
</tr>
</tbody>
</table>

**Step 2: Verify your computer name**

IBM Tivoli Storage Area Network Manager requires fully qualified host names for the manager, managed hosts, and the remote console. To verify your computer name on Windows, see the procedure below.

On Windows, to verify that your computer name is set properly, follow these steps:
1. Right-click on the **My Computer** icon on your desktop.
2. Click **Properties**.
3. The System Properties panel is displayed.
4. Click on the **Network Identification** tab.
5. Click on **Properties**.
6. The Identification Changes panel is displayed. Verify that your computer name is entered correctly. This is the name that the computer will be identified as in the network. Also verify that the Full computer name is a fully qualified host name. For example, user1.sanjose.ibm.com is a fully qualified host name.
7. Click **More**.
8. The DNS Suffix and NetBIOS Computer Name panel is displayed. Verify that the **Primary DNS suffix** field displays a domain name.

The fully qualified host name must match the HOSTS file name (including case-sensitive characters). For information on the HOSTS file, see "Step 3: Change the HOSTS file."

**Step 3: Change the HOSTS file**

When you install Service Pack 3 for Windows 2000 on your computers, you must follow these steps to avoid addressing problems with Tivoli Storage Area Network Manager. The problem is caused by the address resolution protocol which returns the short name (not fully qualified host name). This problem can be avoided by changing the entries in the corresponding host tables on the DNS server and on the local computer. The fully qualified host name must be listed before the short name.
To correct this problem, follow these steps:

1. In the `%SystemRoot%\system32\drivers\etc\` directory, you will find the HOSTS file.
2. You will have to edit the HOSTS file. An example of a HOSTS file is shown below.

```
# Copyright (c) 1993-1995 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows NT.
#
# This file contains the mappings of IP addresses to host names. Each entry should be kept on an individual line. The IP address should # be placed in the first column followed by the corresponding host name. # The IP address and the host name should be separated by at least one # space.
#
# Additionally, comments (such as these) may be inserted on individual # lines or following the machine name denoted by a '#' symbol.
#
# For example:
#   # 102.54.94.97   rhino.acme.com   # source server
#   # 38.25.63.10    x.acme.com      # x client host

192.168.123.146  jason  jason.groupa.mycompany.com
```

3. Enter the fully qualified host name as the first line to be searched in the table. (Lines preceded with a # sign are comment lines.) For example, add the line in bold highlight to the file:

```
# For example:
#
#   # 102.54.94.97   rhino.acme.com   # source server
#   # 38.25.63.10    x.acme.com      # x client host

192.168.123.146  jason.groupa.mycompany.com  jason
192.168.123.146  jason  jason.groupa.mycompany.com
```

**Note:** Host names are case-sensitive. This is a WebSphere limitation. Check your host name. See "Step 2: Verify your computer name" on page 21. For example, if your computer shows the name as JASON (upper case), then you must enter JASON in the HOSTS file.

---

### Step 4: Install DB2

Install DB2 Version 7.2. IBM Tivoli Storage Area Network Manager creates DB2 tables for its data. Install DB2 on the manager computer (Windows 2000).

**Note:** We recommend that you dedicate DB2 for IBM Tivoli Storage Area Network Manager. To have other applications use DB2 can degrade performance.

If you have DB2 Enterprise Edition Version 7.2 installed, you can omit this installation procedure and follow the steps in "Upgrading DB2 with FixPak 10a" on page 27. Otherwise, install DB2; then follow the steps in "Upgrading DB2 with FixPak 10a" on page 27.

To install DB2 on the C: drive; follow these steps.

1. Log on with a user ID with administrator authority to run the installation program.
2. Place the DB2 CD into the CD-ROM drive. If Windows autorun is enabled, DB2 installation starts automatically. The Welcome panel displays. Click Install.

3. If the CD does not automatically run, then go into Windows Explorer and click on your CD-ROM drive. On the right of the Explorer window, double click on the setup.exe program.

4. On the Select Products panel, select DB2 Enterprise Edition. Click Next to continue.
5. On the Select Installation Type panel, select a Typical install. Click Next to continue.

![Select Installation Type panel](image1)

**Figure 4. Select Installation Type panel**

6. If you get the following information panel for OLE DB support, click OK.

![Information panel](image2)

**Figure 5. Information panel**
7. On the **Choose Destination Location** panel, choose a location to install DB2. The default is `C:\Program Files\SQLLIB`. Click **Next** to continue.

![Choose Destination Location panel](image)

**Figure 6. Choose Destination Location panel**

8. On the **Enter Username and Password for Control Center Server** panel, enter your DB2 user name and password and click **Next**. If this user name does not already exist, it will be created and given administrative authority to create DB2 tables and **Logon as a service** permission.

   The default DB2 user ID that is created is `db2admin` with a corresponding password of `db2admin`. You can use this or change it. The examples in this document use `db2admin` to install IBM Tivoli Storage Area Network Manager.

![Enter Username and Password for Control Center Server panel](image)

**Figure 7. Enter Username and Password for Control Center Server panel**
9. On the **Start Copying Files** panel, click **Next**.

![Start Copying Files panel](image)

Figure 8. Start Copying Files panel

The **Install OLAP Starter Kit** panel displays. Check the radio button for **Do not install the OLAP Starter Kit**. Click **Continue**. The DB2 components are installed.

![Install OLAP Starter Kit panel](image)

Figure 9. Install OLAP Starter Kit panel
10. Click **Finish** on the **Setup Complete** panel.

![Setup Complete panel]

**Figure 10. Setup Complete panel**

11. Restart the computer.

12. After the computer restarts, DB2 has been fully installed. Verify that DB2 has been installed correctly and see if the DB2 services have started. On the task bar, click:

   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services

13. Follow the steps to upgrade DB2 with FixPak9. See “Upgrading DB2 with FixPak 10a.”

**Upgrading DB2 with FixPak 10a**

FixPak 10a is required for DB2 Version 7.2. There is a FixPak 10a upgrade file available on the Data Warehouse DB2 CD or at the following ftp site:


If you are using a locale other than English, replace english-us with the appropriate locale. See the DB2 README for FixPak 10a.

**Note:** IBM Tivoli Storage Area Network Manager also supports those users on DB2 FixPak 9. However, FixPak 10a is recommended because it improves performance.

Follow these steps:

1. Log in to Windows as **db2admin** (or another DB2 administrator ID). This user ID must have administrative authority.

2. Stop all database activity before applying this FixPak. From the Windows Services panel, stop the following services:

   - DB2 Security Server (this will prompt you to stop the Warehouse logger and Warehouse Server, click Yes)
   - DB2 License Server
   - DB2 JDBC Applet Server
   - DB2 – DB2DA500
   - DB2 – DB2CTLSV
   - DB2 – DB2
DB2 – DB2 should be the last service to stop and the first service to start (when you restart DB2).

To get to the DB2 command window, issue db2cmd from the command prompt window. You can then issue the DB2 commands.

db2stop
db2admin stop

3. Copy the zip file to your hard disk.
4. Unzip the file.
5. Run the setup.exe file from the directory where you unzipped the FixPak:
x:\setup.exe /i <locale_code>

Locale_code is the language that you want to install. See the DB2 README for FixPak 10a. For English, you do not need the /i locale_code.

6. Follow the instructions on the installation panels. This installs the upgrade over your existing DB2.
7. Restart the system.
8. Run usejdbc2.bat after you install FixPak 10a. This sets the JDBC level 2 driver. This program is in the DB2 installation directory, for example:
   C:\Program Files\SQLLIB\java12

**Step 5: Install the SNMP service**

Tivoli NetView is automatically installed as part of the IBM Tivoli Storage Area Network Manager installation. Tivoli NetView requires the Windows SNMP service. When you install the SNMP service, you will need your Windows 2000 CD. Restart your computer after you install the SNMP service. If the SNMP service is not installed, Tivoli NetView is not installed. If you already have the SNMP service installed, you can omit this step.

Follow these steps to install the SNMP service:

1. From the task bar, click:
   Start ➔ Settings ➔ Control Panel

   The Control Panel window is displayed.

2. Double-click on the Add/Remove Programs icon. The Add/Remove Programs window is displayed.

3. Click Add/Remove Windows Components on the left. The Windows Components Wizard window is displayed.

4. Click Management and Monitoring Tools and then click the Details button.
5. On the Management and Monitoring Tools panel, select Simple Network Management Protocol, then click OK.

6. The Windows Components Wizard panel is displayed. Click Next to continue.

7. If you do not have the Windows 2000 CD in the CD–ROM drive, a prompt asks you to insert the Windows 2000 CD. Insert the Windows 2000 CD into the CD–ROM drive.

8. On the Windows Components Wizard panel, click Finish.
Checking for the SNMP community name

After you have installed SNMP or anytime you apply a service pack or fix pack to Windows, you should check the SNMP community name. To check for the SNMP community name, follow these steps:

1. From the task bar, click:
   
   Start — Settings — Control Panel — Administrative Tools — Services

2. Find SNMP Service in the services list.

3. Right-click on SNMP Service.

4. Click on Properties.

5. The SNMP Service Properties panel is displayed.

6. On the General tab, make sure that the Startup type is Automatic.

7. On the Security tab, make sure that the Community name is public with READ ONLY rights.

8. Close the SNMP Service Properties panel.

Figure 13. SNMP Service Properties panel
Chapter 4. Installing the Windows manager

Before you can install the manager, you must have completed the steps in Chapter 3, “Preparing for installation (Windows manager),” on page 19.

Note:

- If you installed Tivoli Storage Area Network Manager previously and want to save the information in the database before reinstalling the manager, you must use DB2 commands to back up the database (if you specified the DB2 database). For information about the DB2 commands to back up a database, see DB2 Universal Database Command Reference. The default name for the Tivoli Storage Area Network Manager DB2 database is itsanmdb.
- The database name for Cloudscape is itsanm.
- You cannot use the Windows Terminal Services to access a machine that is running the IBM Tivoli Storage Area Network Manager console (either the manager or remote console machine). Any IBM Tivoli Storage Area Network Manager dialogs launched from the SAN menu in Tivoli NetView will appear on the manager or remote console machine only. The dialogs will not appear in the Windows Terminal Services session.
- If you are installing the manager on more than one machine in a Windows domain, the managers on different machines might end up sharing the same database. To avoid this situation, you must either use different database names or different DB2 user names when installing the manager on different machines (if you specified the DB2 database).
- Tivoli Storage Area Network Manager also installs Tivoli NetView 7.1.3. If you already have Tivoli NetView 7.1.1 installed, Tivoli Storage Area Network Manager upgrades it to version 7.1.3. If you have a Tivoli NetView release below version 7.1.1, Tivoli Storage Area Network Manager will prompt you to uninstall Tivoli NetView before installing this product.
- If the installation fails, resolve the problem by reviewing the log files. You can then restart the system so the failed partial installation will be cleaned up before trying to reinstall the manager.
- IBM Tivoli Storage Area Network Manager only supports local user IDs and groups. IBM Tivoli Storage Area Network Manager does not support domain user IDs and groups.
- If you are installing the product from a directory and not from the CD, make sure that your directory names are simple (no spaces or hyphens).
- Make sure that you have installed the SNMP service and have an SNMP community name of Public defined. See “Step 5: Install the SNMP service” on page 28.
- When you install IBM Tivoli Storage Area Network Manager, a DB2 database is automatically created (if you specified the DB2 database). The default database name is itsanmdb.
- If you are installing the AIX manager and want to follow the screens displayed as you install IBM Tivoli Storage Area Network Manager, you can follow the screens in this section.
User IDs and passwords

If you install IBM Tivoli Storage Area Network Manager and specify the Cloudscape database, you will need the user IDs and passwords listed below:
- WebSphere administrative user ID and password
- Host authentication password only
- Tivoli NetView password only

During installation, you can specify to use the same password as the WebSphere administrator password for the host authentication and Tivoli NetView passwords. See Table 9.

If you install IBM Tivoli Storage Area Network Manager and specify the DB2 database, you will need the user IDs and passwords listed below:
- DB2 administrator user ID and password
- DB2 user ID and password
- WebSphere administrative user ID and password
- Host authentication password only
- Tivoli NetView password only

During installation, you can specify to use the same user ID and password as the DB2 administrator ID and password for the DB2 user and WebSphere user. You can also specify to use the same password as the DB2 administrator password for host authentication and Tivoli NetView. See Table 9.

Table 9. User IDs and passwords required for installation

<table>
<thead>
<tr>
<th>User ID and password</th>
<th>ID and password used after install?</th>
<th>Change ID allowed?</th>
<th>Change password allowed?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 administrator</td>
<td>No</td>
<td>Not applicable</td>
<td>Yes, recommended for security reasons</td>
<td>This is a Windows user ID to create the IBM Tivoli Storage Area Network Manager database. Make sure the password has not expired when installing or running IBM Tivoli Storage Area Network Manager. This administrative user ID must be the same one that was created or used during the DB2 installation. Change the password on the operating system.</td>
</tr>
<tr>
<td>DB2 user</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>This is a Windows user ID to access the IBM Tivoli Storage Area Network Manager database. If a user ID does not exist before installing IBM Tivoli Storage Area Network Manager, the user ID will be created during the installation. Make sure that the password has not expired before installing or running IBM Tivoli Storage Area Network Manager. You can change this password to “never expire”. If you want to change the DB2 user ID password after installation, follow these steps: 1. Change the password on the operating system. 2. Change the password in IBM Tivoli Storage Area Network Manager (see <code>runcp ConfigService setPw</code> command in IBM Tivoli Storage Area Network Manager User’s Guide).</td>
</tr>
<tr>
<td>WebSphere administrative user ID</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>To change the user ID and password after installation, see the note below.</td>
</tr>
<tr>
<td>User ID and password</td>
<td>ID and password used after install?</td>
<td>Change ID allowed?</td>
<td>Change password allowed?</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-------------------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| Host authentication password only (no user ID required) | Yes | Not applicable | Yes, recommended for security reasons | You enter this password during installation to allow managed hosts and remote consoles to communicate with the manager. If you change this password on the manager computer, you must also change this password on any managed host or remote console that communicates with this manager.

To change this password after installation, follow these steps:
1. Change the password on the operating system.
2. Change the password using the `srmcp ConfigService setSinglePw` command. For information about this command, see IBM Tivoli Storage Area Network Manager User’s Guide |

| Tivoli NetView password only | Yes | Not applicable | Yes, recommended for security reasons | This is a Windows user ID to access Tivoli NetView. If Tivoli NetView is installed during installation of IBM Tivoli Storage Area Network Manager, a user ID of `netview` is created. This user ID is used to run the NetView service. You are prompted for this password only if IBM Tivoli Storage Area Network Manager installs Tivoli NetView.

To change this password after installation, follow these steps:
1. Change the password on the operating system.
2. Change the logon password for Tivoli NetView Service from the Control panel, using the Services panel. |

**Note:** To change the WebSphere user ID and password, follow this procedure:
1. Open the following file:
   ```
   <install_location>/apps/was/properties/soap.client.props
   ```
2. Modify the following entries:
   - `com.ibm.SOAP.login Userid=<user_ID>` (enter a value for `user_ID`)
   - `com.ibm.SOAP.login Password=<password>` (enter a value for `password`)
3. Save the file.
4. Run the following script:
   ```
   ChangeWASAdminPass.bat <user_ID> <password> [install_dir]
   ```

Where `<user_ID>` is the WebSphere user ID and `<password>` is the password. `[install_dir]` is the directory where the manager is installed and is optional. For example, `<install_dir>` is `c:\tivoli\itsam\manager`. |
Installing the manager

Follow these instructions to install the manager:

1. If you are using DB2 as your database, you must have a DB2 administrator ID to install Tivoli Storage Area Network Manager. If you are using Cloudscape as your database, you do not need a DB2 administrator ID.

2. If you are using DB2 as your database, run `usejdbc2.bat`. This sets the JDBC level 2 driver. This program is in the DB2 installation directory, for example:
   
   ```
   C:\Program Files\SQLLIB\java12
   ```

3. If you have Tivoli NetView 7.1.3 installed, ensure that the following applications are stopped. You can check for Tivoli NetView by opening the Tivoli NetView console icon on your desktop.
   - Web Console
   - Web Console Security
   - MIB Loader
   - MIB Browser
   - Netmon Seed Editor
   - Tivoli Event Console Adaptor Configurator

   Also ensure that you do not have the Windows 2000 Terminal Services running. Go to the Services panel and check for Terminal Services.

4. Insert the Tivoli Storage Area Network Manager (Manager) CD into the CD-ROM drive. If Windows autorun is enabled, the installation program should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD-ROM drive. Double-click on `setup.exe`. The Select a language panel is displayed. Select a language from the drop-down list and click **OK**. This is the language that is used for installing this product.

   **Note:** If you are using a Windows 2003 system and have downloaded IBM Tivoli Storage Area Network Manager code from the ftp site, you must fully extract the code to a directory before you can use the files. For example, right-click on the zip file, then select **Extract files** so that you can specify a directory the files will be extracted to. Then you can double-click on the `setup.exe` file.

![Figure 14. Select a language panel](image-url)
5. The Welcome panel is displayed. Click Next to continue.

![Welcome panel](image1.png)

**Figure 15. IBM Tivoli Storage Area Network Manager Welcome panel**

6. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the I accept the terms in the license agreement radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing Tivoli Storage Area Network Manager.

![Software License Agreement panel](image2.png)

**Figure 16. Software License Agreement panel**
7. The Directory Information panel is displayed. Enter a different directory name or accept the default directory name. The installation program creates the default directory if one does not already exist. Click Next to continue.

**Note:**
- Do not use spaces or hyphens in your directory names.
- If you are installing the AIX manager, the directory path will be different. For example, the directory path might be: `/tivoli/itsanm/manager`.

![Figure 17. Directory Information panel](image)
8. The Port Number panel is displayed. This is a range of eight port numbers for use by Tivoli Storage Area Network Manager. The first port number you specify is considered the primary port number. You only need to enter the primary port number. The primary port number and the next 7 numbers will be reserved for use by Tivoli Storage Area Network Manager. For example, if you specify port number 9550, Tivoli Storage Area Network Manager will use port numbers 9550–9557.

Ensure that the port numbers you use are not used by other applications at the same time. To determine which port numbers are in use on a particular computer, type either of the following commands from a command prompt:

```
netstat -a
netstat -an
```

The port numbers in use on the system are listed in the Local Address column of the output. This field has the format `host:port`.

Enter the primary port number and click **Next** to continue.

![Port Number panel](image)

*Figure 18. Port Number panel*
9. The Database Choice panel is displayed. You can select DB2 or Cloudscape. If you select DB2, you must have previously installed DB2.

![Database Choice panel](image)

*Figure 19. Database Choice panel*
10. The Single or Multiple User ID and Password panel (using DB2) is displayed. If you selected DB2 as your database, you will see this panel. This panel allows you to use the DB2 administrative user ID and password for the DB2 user and WebSphere user. You can also use the DB2 administrative password for the host authentication and NetView password.

For example, if you selected all the choices in the panel, you will use the DB2 administrative user ID and password for the DB2 and WebSphere user ID and password. You will also use the DB2 administrative password for the host authentication and NetView password. If you select a choice, you will not be prompted for the user ID or password for each item you select.

Note:
- If you are installing the AIX manager, you will not see the selection for the NetView password.
- If you selected Cloudscape as your database, this panel is not displayed.

Figure 20. Single or Multiple User ID and Password (using DB2) panel
11. The Single or Multiple User ID and Password panel (using Cloudscape) is displayed. If you selected Cloudscape as your database, you will see this panel. This panel allows you to use the WebSphere administrative user password for the host authentication and NetView password. For example, if you selected all the choices in the panel, you will use the WebSphere administrative password for the host authentication and NetView password. If you select all the choices, you will not be prompted for the host authentication or NetView password.

Note:

- If you are installing the AIX manager, you will not see the selection for the NetView password.

Figure 21. Single or Multiple User ID and Password (using Cloudscape) panel
12. The DB2 Administrator User ID and Password panel is displayed. For information about this Windows DB2 administrator user ID, see Table 9 on page 32. Enter the DB2 administrator ID and enter the password twice. Make sure that your password has not expired. Click Next to continue.

Note:

- If you are installing the AIX manager, this user ID and password is for the DB2 instance owner (for example, db2inst1).
- If you selected Cloudscape as your database, this panel is not displayed.
- If you have DB2 version 8.1 installed and enter an invalid DB2 user ID, and you get this message:
  DB2 version 7.2 FixPak 9 or later required.

Click OK and check to see if you have entered the correct DB2 user ID.

Figure 22. DB2 Administrator User ID and Password panel
13. The DB2 User ID and Password panel is displayed. For information about this Windows user ID, see Table 9 on page 32. Enter a DB2 user ID and password twice.

The default database name is itsanmdb. If this is not your database, enter the correct database name. The database name must be eight characters or less. Click Next to continue.

**Note:**

- If you are using an existing user ID and password, the installation program does not validate this password. Be sure that your user ID and password are valid. Also make sure that your password has not expired before continuing the installation program.

- If you are using the DB2 database, and elected to use the DB2 administrator password for the database, this panel will only prompt you for the database name. (You will not be prompted for the DB2 user ID and password.)

- If you selected Cloudscape as your database, this panel is not displayed.

![DB2 User ID and Password panel](image)

*Figure 23. DB2 User ID and Password panel*
14. The User ID and Password for WebSphere panel is displayed. Enter the user ID and password twice.

**Note:**
- If you are using the DB2 database and elected to use the DB2 administrator user ID password for WebSphere, this panel is not displayed.

*Figure 24. User ID and Password for WebSphere panel*
15. The Password for Host Authentication panel is displayed. You can enter any password you wish, but this same password must be used for all managed hosts and remote consoles that communicate with this manager. For information about this password, see Table 9 on page 32. Enter your password twice. Click Next to continue.

Note:

- If you are using the DB2 database and elected to use the DB2 administrator password for host authentication, this panel is not displayed.
- If you selected Cloudscape as your database and elected to use the WebSphere password for host authentication, this panel is not displayed.

Figure 25. Password for Host Authentication panel
16. The Tivoli NetView Drive Name panel is displayed. Enter the drive name where you want Tivoli NetView installed. Click **Next** to continue.

**Note:**
- If you have Tivoli NetView 7.1.3 installed, this panel is not displayed.
- If you are installing the AIX manager, this panel is not displayed.

![Tivoli NetView Drive Name panel](image)

*Figure 26. Tivoli NetView Drive Name panel*
17. The Tivoli NetView Password panel is displayed. For information about this user ID and password, see Table 9 on page 32. Enter the password twice. Click Next to continue.

Note:

- If you have Tivoli NetView 7.1.3 installed, this panel is not displayed.
- If you are installing the AIX manager, this panel is not displayed.
- If you selected DB2 as your database and elected to use the DB2 administrator password for NetView, this panel is not displayed.
- If you selected Cloudscape as your database and elected to use the WebSphere password for NetView, this panel is not displayed.

![Tivoli NetView Password panel](image)

*Figure 27. Tivoli NetView Password panel*
18. The Tivoli Storage Area Network Manager Install panel is displayed. Click Next to continue.

Note: If you are installing the AIX manager, the directory path is different. For example, the directory path might be: /tivoli/itsanm/manager.

![Figure 28. Tivoli Storage Area Network Manager Install panel](image)

19. The Status panel is displayed. This can take about 15–20 minutes to complete.

![Figure 29. Tivoli Storage Area Network Manager Status panel](image)
20. When the installation has completed, the Successfully Installed panel is displayed.

If the correct version of Tivoli NetView was installed before you installed the manager, you will see the **Finish** button. (Tivoli NetView will not be installed with the manager.) You will not see the next panel to prompt you to restart the system.

If Tivoli NetView was not previously installed and is installed with this installation of the manager, the next panel is displayed. This panel prompts you to restart the system.

Click **Finish** or **Next** to continue.
21. The Complete Installation panel is displayed. To restart your computer, click **Yes, restart my system**. Click **Finish** to complete the installation.

**Note:**
- If you have Tivoli NetView 7.1.3 installed, this panel is not displayed.
- If you are installing the AIX manager, this panel is not displayed.

![Restart Your Computer panel](image)

*Figure 31. Restart Your Computer panel*

22. After your system is restarted, the Tivoli Storage Area Network Manager service is automatically started.

23. It is recommended that you configure your DB2 database after you install IBM Tivoli Storage Area Network Manager. See "Configuring the DB2 database" on page 202.

### Starting and stopping the manager

To start the manager, follow these steps:
1. From the task bar, click on the following:
   ```
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services
   ```
2. On the Services panel, find and highlight **IBM WebSphere Application Server V5 – ITSANM–Manager**.
3. Right-click on **IBM WebSphere Application Server V5 – ITSANM–Manager**.
4. Click **Start**.

To stop the manager, follow these steps:
1. From the task bar, click on the following:
   ```
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services
   ```
2. On the Services panel, find and highlight **IBM WebSphere Application Server V5 – ITSANM–Manager**.
3. Right-click on **IBM WebSphere Application Server V5 – ITSANM–Manager**.
4. Click **Stop**.

**Note:** The Cloudscape server is started and stopped with the manager.

### Checking the log files

After you install the manager, check this log for any errors (using the default directory):

```
c:\tivoli\itsanm\manager\mgrlog.txt
```

If you find installation errors, there are other logs you can check to determine where the problems occurred. The logs are found in this directory:

```
c:\tivoli\itsanm\manager\log\install\   
```

For information about Cloudscape, check the db2j.log and server.log in this directory:

```
c:\tivoli\itsanm\manager\cld_db
```

For information about IBM Tivoli Storage Area Network Manager messages, see *IBM Tivoli Storage Area Network Manager Messages*. 
Chapter 5. Preparing for installation (AIX manager)

Before you can install IBM Tivoli Storage Area Network Manager, there are several steps to complete. The sections below describe those steps.

Step 1: Check for required items

IBM Tivoli Storage Area Network Manager requires specific programs and services to be installed before you can successfully install it. Table 10 provides a list of programs and information that are required by IBM Tivoli Storage Area Network Manager (manager). Table 11 on page 52 provides a list of the programs and information required for the remote console installation. Table 12 on page 52 provides a list of information that is required for the managed host installation.

Table 10. Programs and information required for AIX manager installation

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fully qualified host name of the manager computer. To check for a fully qualified host name, see “Step 2: Verify your computer name” on page 53. Host names are case-sensitive (this is a WebSphere limitation). The manager also requires a static IP address.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>DB2 administrator ID and password</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DB2 Version 7.2 with FixPak 10a installed. If this program is not installed, see “Step 3: Install DB2” on page 54.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A range of eight port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers are 9550 to 9557.</td>
<td></td>
</tr>
</tbody>
</table>

The default port numbers are used as follows:

- **9550**: HTTP port.
- **9551**: Reserved.
- **9552**: Reserved.
- **9553**: Cloudscape server port.
- **9554**: NVDAEMON port.
- **9555**: NVREQUESTER port.
- **9556**: SNMP*TrapPort port on which to get events forwarded from Tivoli NetView.
- **9557**: Reserved.

The information in the following table is for the remote console on Windows.
Table 11. Programs and information required for remote console installation

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tivoli NetView version 7.1.3. If this program is not installed, IBM Tivoli Storage Area Network Manager automatically installs this program. If Tivoli NetView version 7.1.3 is installed, the installation program configures Tivoli NetView. If Tivoli NetView version 7.1.1 is installed, it will be upgraded to 7.1.3.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SNMP Service. To install the SNMP Service, see “Step 5: Install the SNMP service” on page 28.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Task Scheduler service (Windows 2000). This service lists scheduled commands or schedules commands and programs to run on a computer at a specified time and date. This service is installed automatically when you install Windows.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Manager fully qualified host name and port number. To check for the fully qualified host name, see “Checking for a fully qualified host name” on page 206.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>A range of six port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers used are 9560 to 9565. The default port numbers are used as follows: 9560 HTTP port. 9561 Reserved. 9562 Tomcat’s Local Server Port. 9563 Tomcat’s warp port. 9564 NVDAEMON port. 9565 NVREQUESTER port.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Host authentication password</td>
<td></td>
</tr>
</tbody>
</table>

Table 12. Programs and information required for agent installation on the managed host

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manager fully qualified host name and port number. To check for the fully qualified host name, see “Checking for a fully qualified host name” on page 206.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A range of four port numbers (must be in sequential order). Ensure that no other applications are using these port numbers. The default port numbers are 9570 to 9573. The default port numbers are used as follows: 9570 HTTP port. 9571 Reserved. 9572 Tomcat’s Local Server Port. 9573 Tomcat’s warp port.</td>
<td></td>
</tr>
</tbody>
</table>
Table 12. Programs and information required for agent installation on the managed host (continued)

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Item</th>
<th>Enter information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Must have current operating system patches to support JRE 1.3.1. JRE 1.3.1 is installed by the installation program.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Host authentication password</td>
<td></td>
</tr>
</tbody>
</table>

There are some differences in installing the Windows and AIX managers. The differences are:

- Tivoli NetView is not installed or supported on the AIX manager. If you want to see the GUI display for IBM Tivoli Storage Area Network Manager, you should install the remote console on Windows 2000 or Windows XP.

### Step 2: Verify your computer name

IBM Tivoli Storage Area Network Manager requires fully qualified host names for the manager, managed hosts, and the remote console. Host names are case-sensitive. This is a WebSphere limitation. The manager also requires a static IP address. To verify your computer name on AIX, see the information below.

To check to see if your computer is using a static IP address, run this command:

```bash
lssrc -g tcpip
```

Check to see that the `dhcpcd` daemon is not running. An example of the output is shown below showing that the `dhcpcd` daemon is inoperative.

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Group</th>
<th>PID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>inetd</td>
<td>tcpip</td>
<td>7226</td>
<td>active</td>
</tr>
<tr>
<td>snmpd</td>
<td>tcpip</td>
<td>7744</td>
<td>active</td>
</tr>
<tr>
<td>dpid2</td>
<td>tcpip</td>
<td>8260</td>
<td>active</td>
</tr>
<tr>
<td>hostmibd</td>
<td>tcpip</td>
<td>7484</td>
<td>active</td>
</tr>
<tr>
<td>rwhod</td>
<td>tcpip</td>
<td></td>
<td>inoperative</td>
</tr>
<tr>
<td>xntpd</td>
<td>tcpip</td>
<td></td>
<td>inoperative</td>
</tr>
<tr>
<td>dhcpcd</td>
<td>tcpip</td>
<td></td>
<td>inoperative</td>
</tr>
</tbody>
</table>

The default domain name search order is as follows:

1. Domain Name System (DNS) server
2. Network Information Service (NIS)
3. Local `/etc/hosts` file

If the `/etc/resolv.conf` file does not exist, the `/etc/hosts` file is used. If only the `/etc/hosts` file is used, the fully qualified computer name must be the first one that is listed after the IP address.

Verify that the `/etc/resolv.conf` file exists and contains the appropriate information, such as:

```
domain mydivision.mycompany.com
nameserver 123.123.123.123
```

If NIS is installed, the `/etc/irs.conf` file overrides the system default. It contains the following information:

```
hosts = bind,local
```
The /etc/netsvc.conf file, if it exists, overrides the /etc/irs.conf file and the system default. It contains the following information:

```
hosts = bind,local
```

If the NSORDER environment variable is set, it overrides all of the preceding files. It contains the following information:

```
export NSORDER=bind,local
```

### Step 3: Install DB2

Install DB2 Version 7.2. IBM Tivoli Storage Area Network Manager creates DB2 tables for its data. Install DB2 on the manager computer.

**Note:** We recommend that you dedicate DB2 for IBM Tivoli Storage Area Network Manager. To have other applications use DB2 can degrade performance.

If you have DB2 Enterprise Edition Version 7.2 installed, you can omit this installation procedure and follow the steps in “Upgrading DB2 with FixPak 10a” on page 62. Otherwise, install DB2; then follow the steps in “Upgrading DB2 with FixPak 10a” on page 62.

To install DB2, follow these steps.

1. Log in as the root user. Your root user ID must have root authority.
2. Start a terminal session.
3. Load the IBM DB2 CD into the CD-ROM drive and mount the CD. If you do not have a CD-ROM directory, you must create it.
   ```
   # mkdir cdrom  (to create the cdrom directory)
   # mount -v'cdrfs' -r'' /dev/cd0 /cdrom
   
   Note that the -r option is followed by two single quotation marks.
   ```
4. Change to the CD-ROM directory:
   ```
   # cd cdrom
   ```
5. Start the DB2 Set Up utility by running the following command:
   ```
   # ./db2setup
   ```
6. The DB2 Setup Utility panel is displayed. Highlight the **Install** button to the right of **To select products and their components, select Install**. and press **Enter**.

![DB2 Setup Utility panel](image)

**Figure 32. DB2 Setup Utility panel**
7. The DB2 Select Products panel displays. Highlight and press **Enter** to select the following items:
   - DB2 Administration Client
   - DB2 UDB Enterprise Edition
   - DB2 Connect Enterprise Edition

Highlight DB2 Product Library. Then highlight **Customize** and then press **Enter**.

**Navigation tips**
- Press **Tab** to move between available options and fields.
- Highlight and press **Enter** to select an option.

*Figure 33. DB2 Select Products panel*
8. The DB2 Product Library panel is displayed. Highlight the appropriate option for your locale. Highlight **OK**, and then press **Enter**.

![Figure 34. DB2 Product Library panel](image)

9. You will see the DB2 Select Products panel (Figure 33 on page 56). Highlight **OK again**, and then press **Enter**.

10. The Create DB2 Services panel is displayed. Make sure that Do not create a DB2 Instance and Do not create the Administration Server are selected. Highlight **OK**, and then press **Enter**.

![Figure 35. Create DB2 Services panel](image)
11. You will see a Warning message for DB2 instance displayed. Highlight OK, and then press Enter.

![Figure 36. Warning message for DB2 instance](image1)

12. You will see a Warning message for the administration server. Highlight OK, and then press Enter.

![Figure 37. Warning message for the administration server](image2)
13. The Summary Report panel is displayed. Highlight **Continue**, and then press **Enter**.

![Summary Report panel](image1.png)

*Figure 38. Summary Report panel*

14. You will see a warning message for a last chance to stop. This is a normal message. Highlight **OK** to install, and then press **Enter**.

![Warning message](image2.png)

*Figure 39. Warning message*
15. You will see a message for installing. Let the program continue installing. Depending on the speed of your processor, this can take up to 15 minutes.

![Figure 40. Message for installing](image1)

16. You will see a message, "Completed successfully." Highlight OK, and then press Enter.

![Figure 41. Message "Completed successfully"](image2)

17. You will see a pop-up window asking if you want to register the DB2 software. Click Exit, and then click Yes.
18. On the Status Report panel, view the log to make sure that all the components are installed successfully. Highlight OK, and then press Enter.

![Status Report panel](image)

**Figure 42. Status Report panel**

19. You will see the DB2 Setup Utility panel (Figure 32 on page 55). Highlight Close and press Enter to exit db2setup.

20. You will see the following message:

   DB2 Instance is not created.

   Highlight OK and press Enter.

21. You will see the following message:

   The Administration Server is not created.

   Highlight OK and press Enter.

22. You will see the DB2 Setup Utility panel. Highlight OK and press Enter.
23. Highlight Close and press Enter to exit the DB2 Setup Utility.

**Upgrading DB2 with FixPak 10a**

FixPak 10a is required for DB2 Version 7.2. There is a FixPak 10a upgrade file available on the Data Warehouse DB2 CD or on the following ftp site:


If you are using a locale other than English, replace english-us with the appropriate locale. See the DB2 README for FixPak 10a.

If the file is downloaded from the FTP site, it will be in this format:

<filename>.tar.Z

You will need to uncompressed and untar the file. Run these commands:

uncompress <filename>
untar <filename>

**Note:** IBM Tivoli Storage Area Network Manager also supports those users on DB2 FixPak 9. However, FixPak 10a is recommended because it improves performance.

You must have DB2 UDB Version 7.2 or greater already installed before you install this FixPak. To determine if you are at the right level, issue this command:

```
lslpp -al "db2_07_01*"
```

The output of the command should be:

```
db2_07_01.client 7.1.0.x or higher (32-bit only)
```

See the DB2 FixPak 10a README for information about 64-bit.
Before installing FixPak 10a
Before installing this FixPak, follow these steps:

1. Log on as the root user. Your root user ID must have root authority.

2. Enter the following commands for each instance:
   ```bash
   su - db2inst1
   . $HOME/sqlib/db2profile
db2 force applications all
db2 terminate
   db2stop
   db2licd -end  #run at each physical node
   exit
   ```

   If db2inst1 is not your instance owner name, substitute the correct name.

3. While still logged on as root, enter the following commands:
   ```bash
   su - db2as
   . $HOME/sqlib/db2profile
db2admin stop
   exit
   ```

   If db2as is not your administration server name, substitute the correct name.

4. While still logged on as root, run this command to unload unused shared libraries from memory before installing this FixPak:
   ```bash
   /usr/sbin/slibclean
   ```

Installing FixPak 10a
To install FixPak 10a, follow these steps:

1. Run these commands:
   ```bash
   su - root
cd <patches_path>
   ./installFixPak
   ```

   Where <patches_path> is the top directory in which the FixPak image is located.

   By default, installFixPak will commit all of the updated filesets. If you do not want to commit the updates, you should issue the installFixPak command with the -a option (for "apply" versus "commit") as follows:
   ```bash
   ./installFixPak -a
   ```

   For information on installing the FixPak using SMIT and applying the FixPak for the Data Links Manager on AIX, see the DB2 FixPak 10a README.

After installing FixPak 10a
After you install FixPak 10a, you need to update the DB2 instances. You need to be logged on as root to update the instances. Follow these steps:

1. Log on as root.

2. For each instance, run the command below. To list all the instances, run this command:
   ```bash
   /usr/lpp/db2_07_01/instance/db2ilist
   ```

   Then you can run the following command for your instance:
   ```bash
   /usr/lpp/db2_07_01/instance/db2iupdt db2inst1
   ```

   If db2inst1 is not your instance name, substitute the correct name.

3. To update the DAS instance, run this command:
   ```bash
   /usr/lpp/db2_07_01/instance/dasiupdt db2as
   ```
If db2as is not your DAS instance name, substitute the correct name.

For information about enabling the SQL built-in scalar functions and uninstalling the FixPak, see the DB2 FixPak 10a README.

Creating a database instance and administration server

The administration server does not own any databases. The DB2 instance owner owns the databases and is allowed to create or drop DB2 databases.

Perform the following steps to create a DB2 instance, and the resources it requires:

1. Ensure that you are logged into the machine with superuser (root) privileges. Your root user ID must have root authority.
2. Go to the directory containing the DB2 setup utility:
   ```
   cd /usr/lpp/<DB2_program>/install/
   ```
   Where DB2_program is the name of the DB2 program. An example is db2_07_01.
3. Start the DB2 Setup utility by entering the following command:
   ```
   # ./db2setup
   ```
4. The DB2 Setup Utility panel is displayed. Highlight the Create button to the right of To create a DB2 Instance, an Administration Server, or a Data Links Manager Administrator select Create. Press Enter.

![DB2 Setup Utility panel](image)
5. The Create DB2 Services panel is displayed. Highlight the Create a DB2 Instance option and press Enter.

![Create DB2 Services panel](image)

*Figure 45. Create DB2 Services panel*
6. The DB2 Instance panel is displayed. Enter this information for the following fields:
   - User Name – accept the default value, db2inst1.
   - User ID – enter a user ID or accept the default user ID by ensuring that the Use default UID option has an asterisk (*) beside it.
   - Group Name – accept the default value, db2iad1.
   - Group ID – enter a group ID or accept the default group ID by ensuring that the Use default GID option has an asterisk beside it.
   - Home Directory – accept the default value, /home/db2inst1.
   - Password – enter the same password for the user in this field and the Verify Password field. DB2 requires a password of eight or fewer characters.
   - Highlight OK and press Enter.

![DB2 Instance panel](image)

*Figure 46. DB2 Instance panel*
7. The Fenced User panel is displayed. Enter this information for the following fields:
   • User Name – accept the default value, \texttt{db2fenc1}.
   • User ID – enter a user ID or accept the default user ID by ensuring that the Use default UID option has an asterisk (*) beside it.
   • Group Name – accept the default value, \texttt{db2fadm1}.
   • Group ID – enter a group ID or accept the default group ID by ensuring that the Use default GID option has an asterisk (*) beside it.
   • Home Directory – enter a home directory or accept the default value, \texttt{/home/db2fenc1}.
   • Password – enter the same password for the user in this field and the Verify Password field. DB2 requires a password of eight or fewer characters.
   • Highlight \texttt{OK} and press Enter.

\begin{figure}[h]
  \centering
  \includegraphics[width=\textwidth]{fenced_user_panel.png}
  \caption{Fenced User panel}
\end{figure}
8. The DB2 Warehouse Control Database panel is displayed. Highlight **Do not set up DB2 Warehouse Control Database** and press Enter. Highlight **OK** and press Enter.

![Figure 48. DB2 Warehouse Control Database panel](image)

9. The Create DB2 Services panel is displayed. Highlight **Create the Administration Server** and press Enter.

![Figure 49. Create DB2 Services panel](image)
10. The Administration Server panel is displayed. Enter this information for the following fields:
   • User Name – accept the default value, **db2as**.
   • User ID – enter a user ID or accept the default user ID by ensuring that the Use default UID option has an asterisk (*) beside it.
   • Group Name – accept the default value, **db2asgrp**.
   • Group ID – enter a group ID or accept the default group ID by ensuring that the Use default GID option has an asterisk (*) beside it.
   • Home Directory – enter a home directory or accept the default value, **/home/db2as**.
   • Password – enter the same password for the user in this field and the Verify Password field. DB2 requires a password of eight or fewer characters.
   • Highlight OK and press *Enter*.

![Administration Server panel](image)

*Figure 50. Administration Server panel*
11. A notice is displayed informing you of the value being created for the DB2SYSTEM environment variable. Highlight OK and press Enter.

![Notice panel](image1.png)

**Figure 51. Notice panel**

12. The Create DB2 Services panel is displayed. Highlight OK and press Enter.

![Create DB2 Services panel](image2.png)

**Figure 52. Create DB2 Services panel**
13. The Summary Report panel is displayed. Verify the information in the Summary Report. When you have finished, highlight **Continue** and press **Enter**.

![Figure 53. Summary Report panel](image1)

14. A warning message is displayed giving you the option of canceling the configuration processes. To continue, highlight **OK** and press **Enter**.

![Figure 54. Warning message](image2)
15. A message informs you when the processes have completed successfully. Highlight OK and press Enter.

![Completed successfully message](image)

*Figure 55. Completed successfully message*


17. On the DB2 Setup Utility panel, highlight Close and press Enter.

18. A window is displayed that prompts you as follows:

   Do you want to exit DB2 Setup Utility?

Highlight OK and press Enter. The DB2 installation is now complete.

19. Ensure that the user named root is a member of the administration server group named db2asgrp by performing these steps:

   a. Invoke SMIT to change the characteristics of the user by entering smit. Go to these panels:

      Security & User Groups
      Change or Show Characteristics of a Group

   b. The Change Group Attributes panel is displayed. For Group Name, enter db2asgrp. Click OK. If the ADMINISTRATOR list field does not display root, add root to the list, then click OK.
c. The Change Group Attributes panel shows that the procedure is finished. Click **Done**.

d. Click **Cancel** on the Change Group Attributes panel. This displays the Change or Show Characteristics of a Group panel. Select this again.

e. The Change Group Attributes panel is displayed again. For Group Name, enter **db2iadm1**, then click **OK**. If **root** does not appear in the USER list field, add **root** to it, then click **OK**.
f. Click Done when the procedure has completed.
g. When the process is complete, exit from SMIT.

Upgrading the EXTSHM environment variable

To update the number of shared memory segments allowed for a process, follow the steps below to update the user profile. Note that if you reinstall DB2, you must perform these steps again.

Follow these steps:
1. Add the following information to `~db2inst1/sqlib/userprofile`:
   ```
   EXTSHM=ON
   export EXTSHM
   db2set DB2ENVLIST=EXTSHM
   ```
2. You can log in as the DB2 instance owner, for example:
   ```
   su - db2inst1
   ```
   Or you can use this example to run the DB2 command. The `db2profile` calls the `userprofile`.
   ```
   . `~db2inst1/sqlib/db2profile`
   ```
3. Stop DB2:
   ```
   db2stop
   ```
4. Start DB2:
   ```
   db2start
   ```

Checking for DB2

To check to see if DB2 is running, run the commands below. This procedure assumes that `db2inst1` is the DB2 instance owner ID.

````
su - db2inst1
db2 create database test1
db2 connect to test1 user db2inst1 using db2instpass
db2 disconnect test1
db2 drop database test1
```

Make sure that each command runs successfully.
Chapter 6. Installing the AIX manager

Before you can install the manager, you must have completed the steps in Chapter 5, “Preparing for installation (AIX manager),” on page 51.

Note:

- If you installed Tivoli Storage Area Network Manager previously and want to save the information in the database before reinstalling the manager, you must use DB2 commands to back up the database (if you specified the DB2 database). For information about the DB2 commands to back up a database, see DB2 Universal Database Command Reference. The default name for the Tivoli Storage Area Network Manager database is itsanmdb.
- The database name for Cloudscape is itsanm.
- IBM Tivoli Storage Area Network Manager does not support the Tivoli NetView Web console.
- Tivoli NetView is not installed and is not supported on the AIX manager. If you want to see the GUI display for IBM Tivoli Storage Area Network Manager, you should install the remote console on Windows 2000 or Windows XP.
- If the installation fails, resolve the problem by reviewing the log files. Then you can restart the system so the failed partial installation will be cleaned up before trying to reinstall the manager.
- IBM Tivoli Storage Area Network Manager only supports local user IDs and groups. IBM Tivoli Storage Area Network Manager does not support domain user IDs and groups.
- If you are installing the product from a directory and not from the CD, make sure that your directory names are simple names (no spaces or hyphens).
- When you install IBM Tivoli Storage Area Network Manager, a DB2 database is automatically created (if you specified the DB2 database). The default database name is itsanmdb.

User IDs and passwords

If you install IBM Tivoli Storage Area Network Manager and specify the Cloudscape database, you will need the following user IDs and passwords:

- WebSphere administrative user ID and password
- Host authentication password only

During installation, you can specify to use the same password as the WebSphere administrator password for the host authentication password. See Table 13 on page 76.

If you install IBM Tivoli Storage Area Network Manager and specify the DB2 database, you will need the following user IDs and passwords:

- DB2 instance owner user ID and password
- DB2 user ID and password
- WebSphere administrative user ID and password
- Host authentication password only
During installation, you can specify to use the same password as the DB2 instance owner for the DB2 user, host authentication, and WebSphere passwords. See Table 13.

<table>
<thead>
<tr>
<th>User ID and password</th>
<th>ID and password used after install?</th>
<th>Change ID allowed?</th>
<th>Change password allowed?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2 instance owner ID and password</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>This is a user ID to create the IBM Tivoli Storage Area Network Manager database. See page 44 of the Planning and Installation Guide. Make sure that the password has not expired when installing or running IBM Tivoli Storage Area Network Manager. To change the password after installation, follow these steps: 1. Change the password on the operating system. 2. Change the password on DB2.</td>
</tr>
<tr>
<td>DB2 user ID and password to access the database</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>This is an AIX user ID to access the IBM Tivoli Storage Area Network Manager database. Make sure that the password has not expired before installing or running IBM Tivoli Storage Area Network Manager. If you want to change the DB2 user ID password after installation, you must follow these steps: 1. Change the password on the operating system. 2. Change the password in IBM Tivoli Storage Area Network Manager (see <code>srmcp ConfigService setSinglePw</code> command in IBM Tivoli Storage Area Network Manager User’s Guide).</td>
</tr>
<tr>
<td>WebSphere administrative user ID</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>To change the user ID and password, see the note below.</td>
</tr>
<tr>
<td>Host authentication password only (no user ID required)</td>
<td>Yes</td>
<td>Not applicable</td>
<td>Yes, recommended for security reasons</td>
<td>You enter this password during installation to allow managed hosts and remote consoles to communicate with the manager. If you change this password on the manager computer, you must also change this password on any managed host or remote console that communicates with this manager. You can change this password by using the <code>srmcp ConfigService setSinglePw</code> command. For information about this command, see IBM Tivoli Storage Area Network Manager User’s Guide.</td>
</tr>
</tbody>
</table>

**Note:** To change the user ID and password for WebSphere, follow this procedure:

1. Edit the following file:
   ```
   <install_directory>/apps/was/properties/soap.client.props
   ```

2. Modify the following entries:
   ```
   • com.ibm.SOAP.login UserId=<user_ID> (enter a value for `user_ID`)  
   • com.ibm.SOAP.login Password=<password> (enter a value for `password`)  
   ```
3. Save the file.

4. Run the following script:
   ```bash
   ChangeWASAdminPass.sh <user_ID> <password> [install_dir]
   ```

   Where `<user_ID>` is the WebSphere user ID and `<password>` is the password. `[install_dir]` is the directory where the manager is installed and is optional. For example, `<install_dir>` is `/tivoli/itsanm/manager`.

---

**Installing the AIX manager**

These instructions use similar panels as the installation of the manager on Windows. Refer to the panels in [“Installing the manager” on page 34](#).

Follow these instructions to install the manager:

1. You must log in as the root user with root authority.
2. Use these commands to create the directory, and determine the mount directory. The command also runs the install script. The install script is in the `manager` directory. Run these commands:
   ```bash
   mkdir /cdrom
mount -v'cdfs' -r' /dev/cd0 /cdrom
cd /cdrom/manager
./setup.aix
   ```

   Note that the `-r` option is followed by two single quotation marks.
3. The Select a language panel is displayed. Select a language from the drop–down list and click **OK**. This is the language that is used for installing this product. See step 4 on page 34.
4. The Welcome panel is displayed. Click **Next** to continue.
5. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the **I accept the terms in the license agreement** radio button. Click **Next** to continue. If you do not accept the terms of the license agreement, the installation program will end without installing Tivoli Storage Area Network Manager.
6. The Directory Information panel is displayed. Enter a different directory name or accept the default directory name. The installation program creates the default directory if one does not already exist. Click **Next** to continue.

   **Note:** Do not use spaces or hyphens in your directory names.
7. The Port Number panel is displayed. This is a range of seven port numbers for use by Tivoli Storage Area Network Manager. The first port number you specify is considered the **primary port number**. You only need to enter the primary port number. The primary port number and the next 6 numbers will be reserved for use by Tivoli Storage Area Network Manager. For example, if you specify port number 9550, Tivoli Storage Area Network Manager will use port numbers 9550–9556.

   Ensure that the port numbers you use are not used by other applications. Enter the primary port number and click **Next** to continue.
8. The Database Choice panel is displayed. You can select DB2 or Cloudscape. If you select DB2, you must have previously installed DB2.
9. If you selected DB2 as your database, you will see the Single or Multiple User ID and Password panel for DB2. See step 10 on page 39.

---

Chapter 6. Installing the AIX manager 77
10. If you selected Cloudscape as your database, you will see the Single or Multiple User ID and Password panel for Cloudscape. See Step 11 on page 40

11. The DB2 Administrator User ID and Password panel is displayed. This user ID and password is for the DB2 instance owner (for example, db2inst1). See Table 13 on page 76. Enter the DB2 instance owner ID and enter the password twice. Make sure that your password has not expired. Click Next to continue.

   **Note:** If you have DB2 version 8.1 installed and enter an invalid DB2 user ID, and you get this message:
   
   DB2 version 7.2 FixPak 9 or later required.
   
   Click OK and check to see if you have entered the correct DB2 instance owner ID for AIX.

12. The DB2 User ID and Password panel is displayed. For information about this user ID, see Table 13 on page 76. Enter a DB2 user ID and password twice. The default database name is itsanmdb. If this is not your database, enter the correct database name. The database name must be eight characters or less. Click Next to continue.

   **Note:** If you are using an existing user ID and password, the installation program does not validate this password. Be sure that your user ID and password are valid. Also make sure that your password has not expired before continuing the installation program.

13. The User ID and Password for WebSphere panel is displayed. Enter the user ID and password twice.

14. The Password for Host Authentication panel is displayed. You can enter any password you wish, but this same password must be used for all managed hosts and remote consoles that communicate with this manager. For information about this password, see Table 13 on page 76. Enter your password twice. Click Next to continue.

15. The Tivoli Storage Area Network Manager Install panel is displayed. Click Next to continue.

16. The Tivoli Storage Area Network Manager Status panel is displayed. This can take about 15–20 minutes to complete. You will see other command prompt windows open and close as the installation continues.

17. When the installation has completed, the Successfully Installed panel is displayed.
   
   Click Finish to exit the wizard.

18. It is recommended that you configure your DB2 database after you install IBM Tivoli Storage Area Network Manager. See “Configuring the DB2 database” on page 202.

**Starting and stopping the manager**

To start the manager on AIX, go to the working directory and run this command (using the default directory):

```
/tivoli/itsanm/manager/bin/aix/startSANM.sh
```

To stop the manager on AIX, go to the working directory and run this command (using the default directory):

```
/tivoli/itsanm/manager/bin/aix/stopSANM.sh
```

**Note:** The Cloudscape server is started and stopped with the manager.
Checking the log files

After you install the manager, check this log for any errors (using the default directory):
/tivoli/itsanm/manager/mgrlog.txt

If you find installation errors, there are other logs you can check to determine where the problems occurred. The logs are in this directory:
/tivoli/itsanm/manager/log/install/

For information about Cloudscape, check the db2j.log and server.log in this directory:
/tivoli/itsanm/manager/cld_db

For information about IBM Tivoli Storage Area Network Manager messages, see IBM Tivoli Storage Area Network Manager Messages.
Chapter 7. Installing the agent on the managed host

Important
Before installing Tivoli Storage Area Network Manager, make sure that your SAN is operational. Check the following:

- You have installed the appropriate HBA (host bus adapter) cards and device drivers (for example, the QLogic HBA and device drivers). For EDFI, the phase 2 common HBA API must be installed on the managed host. This is required to gather port statistics. For a device compatibility list, see the following Web address:


  Select Device Compatibility Table.

- Make sure that the device driver package for your HBA has installed support for the common HBA API or that you have run a separate install program for it. Contact your HBA manufacturer if you are unsure.

Attention:

We strongly recommend that you do not install Tivoli Storage Area Network Manager agents on any servers that communicate with removable media devices. Each time a discovery is run, the agents send SCSI commands to devices to identify their device types. If the target is a removable media device that cannot handle command queuing, a long tape read or write command might fail.

Note:

- Before you can install the Tivoli Storage Area Network Manager agent, you must have a Windows user ID that has administrative authority or a UNIX user ID with root authority. You must also have the information as noted in Table 8 on page 20.

- You must have 150 MB of temporary disk space to install the agent.

- To change the port number for a managed host, you must first uninstall the agent, then reinstall the agent. The manager will consider the managed host with the changed port number as a new managed host.

Installing the IBM Tivoli Storage Area Network Manager agent on Windows

You must have administrative authority to install the agent. Follow these instructions to install the Tivoli Storage Area Network Manager agent:

1. Check to see that your system is using a fully qualified host name. See “Checking for a fully qualified host name” on page 206

2. For Windows NT only: You must have the Microsoft msi program installed. If you do not, go to this Web site:


   Install the Microsoft msi program from this Web site before installing the IBM Tivoli Storage Area Network Manager agent.
3. Insert the Tivoli Storage Area Network Manager Agents CD into the CD-ROM drive. If Windows autorun is enabled, the installation program should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD-ROM drive. Double-click on setup.exe.

**Note:** If you are using a Windows 2003 or XP system and have downloaded IBM Tivoli Storage Area Network Manager code from the ftp site, you must fully extract the code to a directory before you can use the files. For example, right-click on the zip file, then select Extract files so that you can specify a directory the files will be extracted to. Then you can double-click on the setup.exe file.

4. The Select a language panel is displayed. Select a language from the drop-down list and click **OK**. This is the language that is used for installing this product.

![Select a language panel](image1.png)

**Figure 59. Select a language panel**

5. The Welcome panel is displayed. Click **Next** to continue.

![Welcome panel](image2.png)

**Figure 60. Tivoli Storage Area Network Manager Welcome panel**
6. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select **I accept the terms in the license agreement** radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing the Tivoli Storage Area Network Manager agent.

![License Agreement panel](image)

*Figure 61. License Agreement panel*
7. The Directory Information panel is displayed. Enter a different directory name or accept the default directory name. Enter an absolute path for the destination, for example on Windows, c:\tivoli\itsanm\agent. Click Next to continue.

Note:
- Do not use spaces or hyphens in your directory names.
- This panel will have a different directory path for the UNIX installation, for example, /tivoli/itsanm/agent

![Directory Information panel](image)

Figure 62. Directory Information panel

8. The Manager Information panel is displayed. Enter the fully qualified host name and primary port number for Tivoli Storage Area Network Manager. The primary port number is the first port number you specified in step 8 on page 37. Click Next to continue.
9. The Port Number panel is displayed. This port number is a range of four port numbers. The initial port number you enter is considered the primary port number. You only need to enter the primary port number here. For information about port numbers, see Table 8 on page 20. Enter the primary port number. Click Next to continue.

Figure 63. Manager Information panel

Figure 64. Port Number panel
10. The Password for Host Authentication panel is displayed. This password must use the same password as the manager this managed host communicates with. For information about this password, see Table 9 on page 32. Enter your password twice. Click Next to continue.

![Password for Host Authentication panel](image)

**Figure 65. Password for Host Authentication panel**

11. The Confirmation panel is displayed. Click Next to finish.

**Note:** For UNIX systems, the directory path is /tivoli/itsanm/agent.

![Confirmation panel](image)

**Figure 66. Confirmation panel**
12. The Status panel is displayed.

![Figure 67. Status panel](image1)

13. When installation is complete, the Successfully Installed panel is displayed. Click **Finish** to complete the installation.

![Figure 68. Successfully Installed panel](image2)

14. The agent is automatically started after installation.
Starting and stopping the agent on Windows

If you need to manually start or stop the agent, click:
Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services

The Services panel is displayed. You can stop or start the agent service from the Services panel.

To stop the agent, right-click on ITSANM-Agent. Click Stop. A confirmation panel is displayed indicating that the service has stopped.

To start the agent, right-click on ITSANM-Agent. Click Start. A confirmation panel is displayed indicating that the service has started.

Installing the agent on Solaris

You must have root authority to install the agent. Follow these instructions to install the Tivoli Storage Area Network Manager agent:

1. Insert the IBM Tivoli Storage Area Network Manager Agents CD into the CD–ROM drive.
2. You must mount the drive manually. The install script is in the agent directory. Use these commands to determine the mount directory (for example, /cdrom/agent) and run the install script:
   - df -k (to look for mounted system)
   - cd /cdrom/agent
   - ./setup.sol (this is for Solaris)
3. Follow the directions on the installation panels starting with step 4 on page 82
4. The agent is automatically started after installation.

Starting and stopping the agent on Solaris

If you need to start the agent, go to the working directory and run this command:
/tivoli/itsanm/agent/bin/solaris2/tcstart.sh

To stop the services, go to the working directory and run this command:
/tivoli/itsanm/agent/bin/solaris2/tcstop.sh

Installing the agent on AIX

You must have root authority to install the agent. Follow these instructions to install the Tivoli Storage Area Network Manager agent:

1. Insert the IBM Tivoli Storage Area Network Manager Agents CD into the CD–ROM drive.
2. Use these commands to determine the mount directory and run the install script. The install script is in the agent directory. Run these commands:
   - mkdir /cdrom
   - mount -v'cdrfs' -r'' /dev/cd0 /cdrom
   - cd /cdrom/agent
   - ./setup.aix
3. Follow the directions on the installation panels starting with step 4 on page 82
4. The agent is automatically started after installation.

5. Install the IBM Tivoli Storage Area Network Manager AIX protocol driver.
   Follow this procedure:
   a. Go to the /tivoli/itsanm/agent/bin/aix directory. For example:
Starting and stopping the agent on AIX

To start the agent on AIX, go to the working directory and run these commands (using the default directory):

```
/tivoli/itsanm/agent/bin/aix/tcstart.sh
```

To stop the agent on AIX, go to the working directory and run this command (using the default directory):

```
/tivoli/itsanm/agent/bin/aix/tcstop.sh
```

Installing the agent on Linux

Before you install the Linux agent, note the following requirements:

- You must have root authority to install the agent.
- The Advanced Power Management Daemon (APMD) should be disabled on Linux machines. APMD shuts down the network card when the screen saver (after a few minutes of inactivity) is displayed. The agent stops communicating with the manager when the network card is down.

Follow these instructions to install the Tivoli Storage Area Network Manager agent:

1. Disable APMD. To disable APMD, click:
   - Start here — System Settings — Service Configuration
   - Uncheck APMD, then click OK.
2. Insert the IBM Tivoli Storage Area Network Manager Agents CD into the CD-ROM drive.
3. Run the commands below. The commands creates the CD-ROM directory, mounts the CD-ROM directory, changes to the agent directory, and then runs the installation script.
   - `mkdir /cdrom`
   - `mount /dev/cd0 /cdrom`
   - `cd /cdrom/agent`
   - `./setup.lin`
4. Follow the directions on the installation panels starting with step 4 on page 82
5. The agent is automatically started after installation.

Starting and stopping the agent on Linux

If you need to start the agent, run this command:

```
/tivoli/itsanm/agent/bin/linux/tcstart.sh
```

To stop the agent, run this command:

```
/tivoli/itsanm/agent/bin/linux/tcstop.sh
```
Checking the log files

After you install the Windows agent, check this log for any errors (using the default directory):
c:\tivoli\itsanm\agent\agentLog.txt

After you install the UNIX agent, check this log for any errors (using the default directory):
tivoli/itsanm/agent/agentLog.txt

For information about IBM Tivoli Storage Area Network Manager messages, see IBM Tivoli Storage Area Network Manager Messages.
Chapter 8. Installing the remote console

The remote console allows you to access IBM Tivoli Storage Area Network Manager from any location. If you have multiple operators that need to view the topology of your environment, having several remote consoles set up provides easy access for monitoring your environment.

You must have a Windows user ID with administrative authority to install the IBM Tivoli Storage Area Network Manager console. The console must be installed on a Windows 2000 or XP platform. If you have Tivoli NetView 7.1.3 installed, IBM Tivoli Storage Area Network Manager will configure Tivoli NetView, but will not install it. If you do not have Tivoli NetView 7.1.3 installed, IBM Tivoli Storage Area Network Manager will install Tivoli NetView.

Note:

- You cannot use the Windows Terminal Services to access a machine that is running the IBM Tivoli Storage Area Network Manager console (either the manager or remote console machine). Any IBM Tivoli Storage Area Network Manager dialogs launched from the SAN menu in Tivoli NetView will appear on the manager or remote console machine only. The dialogs will not appear in the Windows Terminal Services session.

- Make sure that you have installed the SNMP service and have an SNMP community name of Public defined. See "Step 5: Install the SNMP service" on page 28.

- If the remote console installation fails, resolve the problem by reviewing the log files. Then you can reboot the system so the failed partial installation will be cleaned up before trying to reinstall the remote console. Delete all files below the base installation directory (console and below). For example, delete all files starting from this directory and below:
  c:\tivoli\itsanm\console

Before installing the remote console

After you install Service Pack 3 for Windows 2000 on your computers, you must follow these steps to avoid addressing problems with Tivoli Storage Area Network Manager. The problem is caused by the address resolution protocol which returns the short name (not fully qualified host name). This problem can be avoided by changing the entries in the corresponding host tables on the DNS server and on the local computer. The fully qualified host name should be listed before the short name. To correct this problem, follow the steps in "Changing the HOSTS file" on page 208.
Installing the remote console

Before installing the remote console, make sure that you have 150 MB of temporary disk space available. You can find the temporary disk by entering this command:

```bash
echo %TEMP%
```

Follow these instructions to install the remote console:

1. If you have Tivoli NetView 7.1.3 installed, make sure that the following applications are stopped:
   - Web Console
   - Web Console Security
   - MIB Loader
   - MIB Browser
   - Netmon Seed Editor
   - Tivoli Event Console Adaptor Configurator

2. Install the SNMP Service. See “Step 5: Install the SNMP service” on page 28

3. Insert the Tivoli Storage Area Network Manager (Remote Console) CD into the CD-ROM drive. If Windows autorun is enabled, the installation program should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD-ROM drive. Double-click on `setup.exe`.

   **Note:** If you are using a Windows 2003 or XP system and have downloaded IBM Tivoli Storage Area Network Manager code from the ftp site, you must fully extract the code to a directory before you can use the files. For example, right-click on the zip file, then select `Extract files` so that you can specify a directory the files will be extracted to. Then you can double-click on the `setup.exe` file.

4. The Select a language panel is displayed. Select a language from the drop-down list and click **OK**. This is the language that is used for installing this product.

   ![InstallShield Wizard](image)

   *Figure 69. Select a language panel*

5. The Welcome panel is displayed. Click **Next** to continue.
6. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the I accept the terms in the license agreement radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing IBM Tivoli Storage Area Network Manager.

Figure 70. IBM Tivoli Storage Area Network Manager Welcome panel

Figure 71. Software License Agreement panel
7. The Directory Information panel is displayed. Enter a different directory name or accept the default directory name where IBM Tivoli Storage Area Network Manager will be installed. Click Next to continue.

**Note:** Do not use spaces or hyphens in your directory names.

![Diagram of the Directory Information panel]

*Figure 72. Directory Information panel*
8. The Manager Information panel is displayed. This is the fully qualified host name and primary port number for the manager computer. The primary port number is the first port number you specified in step 8 on page 37. Enter your information and click Next to continue.

![Manager Information panel](image)

*Figure 73. Manager Information panel*

9. The Port Number panel is displayed. This port number is a range of six port numbers. The initial port number you enter is considered the primary port number. For information about port numbers, see Table 7 on page 20. Enter the primary port number. Click Next to continue.
10. The Password for Host Authentication panel is displayed. This password must use the same password as the manager this remote console communicates with. For information about this password, see Table 9 on page 32. Enter your password twice. Click Next to continue.

11. The Tivoli NetView Drive Name panel is displayed. Enter the drive name where you want Tivoli NetView installed. Click Next to continue.
Note: This panel is *not* displayed if you have Tivoli NetView 7.1.3 installed.

Figure 76. Tivoli NetView Drive Name panel

12. The Tivoli NetView Password panel is displayed. For information about this user ID and password, see Table 9 on page 32. Enter the password twice. Click Next to continue.

Note: This panel is *not* displayed if you have Tivoli NetView 7.1.3 installed.

Figure 77. Tivoli NetView Password panel
13. The Install Confirmation panel is displayed. Confirm that the specified directory is where you want to install the console. Click Next to continue.

![Install Confirmation panel](image1)

**Figure 78. Install Confirmation panel**

14. The Status panel is displayed. This will take about 15–20 minutes. You will see several command prompt windows open and close during the installation.

![Status panel](image2)

**Figure 79. Status panel**
15. When the installation has completed, the Successfully Installed panel is displayed. Click Next to continue.

![Successfully Installed panel](image1)

*Figure 80. Successfully Installed panel*

16. The Restart Your Computer panel is displayed. To restart your computer, click Yes, restart my system. Click Finish to complete the installation.

![Restart Your Computer panel](image2)

*Figure 81. Restart Your Computer panel*
17. If the prompt panel in step 16 on page 99 is not displayed, you must still reboot your computer. Reboot your computer.

18. After rebooting your computer, check to see if the Tivoli Storage Area Network Manager console has been started. Click the following:

Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services (NT Services) ➔ ITSANM – Console

19. If you have DB2 installed, you must copy the db2java.zip file from the DB2 directory on the manager machine to the remote console directory. You must copy it twice: once as a zip file and once as a jar file. For example, copy this file from the following default directory from the manager machine:

c:\Program Files\SQLLIB\java12\db2java.zip

(file is the directory where you installed your DB2)

**Note:** If you have DB2 version 8.1 installed, the default directory is:

c:\Program Files\IBM\SQLLIB\java

Copy this file to the following directory:

c:\<console_install_dir>\lib

<console_install_dir> is where the remote console is installed. For example, you will have two copy commands:

- **copy**: c:\db2java.zip
- **copy**: c:\db2java.jar

<DB2_install_dir> is where DB2 is installed. Note that the file extension has been changed to "jar" in the second copy command. In the remote console directory, you will have a db2java.zip file and a db2java.jar file.

20. After you install the IBM Tivoli Storage Area Network Manager console, you need to create trap entries in the Tivoli NetView trapd.conf file. See "Setting up the MIB file in Tivoli NetView" on page 112.

### Starting and stopping the remote console

To start the remote console, follow these steps:

1. From the task bar, click on the following:

   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services

2. On the Services panel, find and highlight **ITSANM – Console**.

3. Right-click on **ITSANM – Console**.

4. Click **Start**.

To stop the remote console, follow these steps:

1. From the task bar, click on the following:

   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services

2. On the Services panel, find and highlight **ITSANM – Console**.

3. Right-click on **ITSANM – Console**.

4. Click **Stop**.
Checking the log files

After you install the remote console, check this log for any errors (using the default directory):

\[c:\tivoli\itsanm\console\log.txt\]

Other logs you might want to check for error conditions are the Tivoli NetView logs in this default directory:

\[c:\tivoli\itsanm\console\nv\log\*\]

If you are rebooting the remote console and the manager is running, you might see these error messages:

- BTASD1863E An error occurred while sending the string through the socket.com.tivoli.sanmgmt.tsanm.console.network.MsgSendersendCheckMsg
- BTASD1865E An error occurred while writing into the socket.com.tivoli.sanmgmt.tsanm.console.network.ClientSockCleintSock
- BTASD1856E Connection to the IBM Tivoli NetView daemon is down.com.tivoli.sanmgmt.tsanm.console.SanManagerDaemon$MapperWatchThreadrun

These messages are normal messages in this environment.

For information about IBM Tivoli Storage Area Network Manager messages, see *IBM Tivoli Storage Area Network Manager Messages.*
Chapter 9. Configuring IBM Tivoli Storage Area Network Manager

This section provides information on the different configuration options you can select and the procedures you can follow to accomplish those goals.

Follow these general steps to configure IBM Tivoli Storage Area Network Manager:

1. Select a configuration option and follow the steps to complete the configuration. See “Configuration options” on page 104.
3. Set up the mib file. See “Setting up the MIB file in Tivoli NetView” on page 112.
4. Configure IBM Tivoli Storage Area Network Manager to send events. See “Configuring IBM Tivoli Storage Area Network Manager to send events” on page 112.

Other configuration information include the following:

- Configuring devices to send events to the Tivoli Enterprise Console. See “Configuring devices to send events to the Tivoli Enterprise Console” on page 114.
- Configuring IBM Tivoli Storage Area Network Manager for iSCSI discovery. See “Configuring IBM Tivoli Storage Area Network Manager for iSCSI discovery” on page 116.
- Configuring IBM Tivoli Storage Area Network Manager for EDFI. See “Configuring IBM Tivoli Storage Area Network Manager for EDFI” on page 119.

For more information about in-band events and out-of-band SNMP traps, see "Additional information” on page 215.

Note:

- Switches that are being managed out-of-band such as SNMP agents should be configured to use the SNMP V1 protocol. Some switches use SNMP V2 or V3 by default and must be reconfigured before they can work correctly with IBM Tivoli Storage Area Network Manager. Refer to the switch vendor documentation for specific configuration details.

Controlling and filtering events

IBM Tivoli Storage Area Network Manager performs discoveries when it receives events to update the information in the database. Generally, these events are SNMP traps from switches indicating SAN changes. Storage subsystems and other devices can be configured to send SNMP traps to IBM Tivoli Storage Area Network Manager to initiate the rediscover scan process.

Not all traps that can be published by devices indicate changes in SAN status or configuration. For example, many devices support various levels of SNMP traps and the monitoring of internal parameters and counters. These traps would cause many unwanted rediscoveries by IBM Tivoli Storage Area Network Manager. You
should avoid sending these traps to IBM Tivoli Storage Area Network Manager. This can be configured at the device level or can be filtered using Tivoli NetView.

Tivoli NetView provides an event forwarding service. This environment is configured by having the devices send SNMP traps to Tivoli NetView and then having NetView configured to send SNMP traps to IBM Tivoli Storage Area Network Manager. This allows viewing the events in the Tivoli NetView event monitor. This also causes IBM Tivoli Storage Area Network Manager to perform a rediscovery based on the reception of these events.

The only events that should be forwarded from Tivoli NetView to IBM Tivoli Storage Area Network Manager are the events that indicate a change in SAN status or configuration. Other proprietary traps from switches and storage devices that indicate SAN status or configuration changes should also be configured for forwarding. For example, events from an Enterprise Storage Server that indicate internal changes such as LUN configuration changes should be forwarded to IBM Tivoli Storage Area Network Manager. This is important to get LUN level information on events.

### Configuration options

The following sections provide information about the different configuration options you can select. Refer to [Figure 82](#) as you read through the configuration options.

---

**Figure 82. IBM Tivoli Storage Area Network Manager configuration options**

**Configuring devices and programs to send all SNMP traps to the Tivoli NetView console**

This is the configuration Tivoli Storage Area Network Manager is designed to best support. This supports path 1 in [Figure 82](#). In this case, Tivoli NetView is the SNMP console. Tivoli NetView by default listens for SNMP traps on port 162. Many devices and storage subsystems in your storage network can be configured to send SNMP traps to this port number. Configure those individual devices to point to the machine that is running Tivoli NetView.
The procedure below describes how to configure IBM Tivoli Storage Area Network Manager to send traps to IBM Tivoli Storage Area Network Manager. See “Configuring devices to send traps to IBM Tivoli Storage Area Network Manager” on page 106. Tivoli Storage Area Network Manager is able to update the topology display to reflect the status of your storage network based on information that is gathered from its managed hosts.

If you also configured Tivoli Storage Area Network Manager to send SNMP traps to the Tivoli NetView console (path 3), then this configuration tracks all the SNMP traps in your storage network. This can be done from one console. The Tivoli NetView console can be used as your SNMP management console. You can view device information and monitor the changes in device status in the Tivoli NetView Event Browser.

If you have an AIX manager, and want the manager to receive traps for an event-based discovery, then the traps from the switch should be sent to port 162 on an SNMP console. You can use the remote console on a Windows machine as the SNMP console. You can then associate this console with the AIX manager. The trapfrwd.conf file on the remote console should be modified with the IP address of the AIX manager (instead of the local host). The port is 9556 by default.

**Procedure for configuring devices and programs**

If you already have Tivoli NetView installed and then install the manager, you must perform step 1. To implement this configuration, do the following:

1. Set up Tivoli NetView trap forwarding.

   Follow these steps to set up Tivoli NetView:

   a. Configure the Tivoli NetView trapfrwd daemon. Edit the trapfrwd.conf file in directory `/usr/ov/conf`. This file contains two sections: The Hosts section and the Traps section. Modify the Hosts section to specify the host name and port to forward traps to. Modify the Traps section to specify which traps Tivoli NetView should forward. The traps to forward for Tivoli Storage Area Network Manager are:

      ```
      #mgmt
      1.3.6.1.2  * (Includes MIB-2 traps and McDATA's FC Management MIB traps)
      #experimental
      1.3.6.1.3  * (Includes FE MIB and FC Management MIB traps)
      1.3.6.1.4  * (Includes proprietary MIB traps and QLogic's FC Management MIB traps)
      #Andiamo
      1.3.6.1.4.1.9524  *
      #Brocade
      1.3.6.1.4.1.1588  *
      #Cisco
      1.3.6.1.4.1.9  *
      #Gadzoox
      1.3.6.1.4.1.1754  *
      #Inrange
      1.3.6.1.4.1.5808  *
      #McData
      1.3.6.1.4.1.289  *
      #Nishan
      1.3.6.1.4.1.4369  *
      #QLogic
      1.3.6.1.4.1.1663  *
      ```

   b. Configure Tivoli NetView to start the trapfrwd daemon. The trapfrwd daemon must be running before traps are forwarded. Tivoli NetView does not start this daemon as a default. To configure Tivoli NetView to start the trapfrwd daemon, enter these commands:
ovaddobj \usr\ov\lrf\trapfrwd.lrf
ovstart trapfrwd

To verify that the trapfrwd daemon is running, click the following from the menu bar:
Options ➔ Server Setup

Verify that the trapfrwd daemon is running.

2. Configure the switch to send SNMP traps to the SNMP management console port number. Ensure that the SNMP management console is listening to this port number.
3. Configure the SNMP management console to forward traps to Tivoli Storage Area Network Manager.

Configuring devices to send traps to IBM Tivoli Storage Area Network Manager

You can configure the devices in your storage network to send SNMP traps directly to Tivoli Storage Area Network Manager. This supports path 2 in Figure 82 on page 104. Configure the devices to send their traps to Tivoli Storage Area Network Manager (management server). Change the port number on the device. This configuration redisCOVERS the network topology in response to the SNMP traps it receives. However, the traps that are sent to Tivoli Storage Area Network Manager are not logged in the Tivoli NetView Event browser. The ability to view the trap information on a console would be unavailable in this situation. Because some devices do not support changing the port number to which they send SNMP traps, this configuration is not available in all hardware environments.

Procedure to send traps to Tivoli Storage Area Network Manager

To implement this configuration, follow these steps:

1. Configure the switch to send traps to the Tivoli Storage Area Network Manager (manager machine) port. The port number is the primary port number plus 6. The primary port number is specified when you install the manager machine in step 8 on page 37 For example, if you specified 9550 as the primary port number, the switch should be set to port number 9556 (9550+6).
2. Set the SNMP community name to PUBLIC which is the default. If you do not want to use the PUBLIC community name, you can set the community name to some other name. See “Changing the SNMP community name” on page 210.

Configuring devices to send traps to both IBM Tivoli Storage Area Network Manager and the SNMP console

Some devices can be configured to forward their SNMP traps to more than one location. This supports both paths 1 and 2 as shown in Figure 82 on page 104. With this configuration, you can view all of the events that Tivoli Storage Area Network Manager and your storage devices generate. You can view this on one common SNMP management console. Tivoli Storage Area Network Manager is able to respond to the SNMP traps it receives from the devices in your storage network. This determines when it should redisCOVER the network topology. Because not all devices support this ability, this configuration might not be available in all environments.

Procedure to send traps to both Tivoli Storage Area Network Manager and SNMP management console

To use this option, set the switch to send traps to the SNMP management console and IBM Tivoli Storage Area Network Manager.
Configuring the out–of–band agents

IBM Tivoli Storage Area Network Manager uses agents to discover your storage environment and to monitor its status. Use the Storage Area Network Manager Configuration panel to do the following:

- View or remove inactive in–band agents
- View, add, remove, or configure out–of–band agents (SNMP agents)

**Configuring the agents**

To configure the agent, follow this procedure:

1. Select the following from the Tivoli NetView console menu:
   
   SAN ➤ Configuration

![Figure 83. Tivoli NetView menu](image_url)
2. The Storage Area Network Manager Configuration panel is displayed. Click Configure Manager.

![Image of Storage Area Network Manager Configuration panel]

*Figure 84. Storage Area Network Manager Configuration panel*
3. The SAN Configuration notebook is displayed. Click the **Agent Configuration** tab on the left.

![SAN Configuration notebook](image)

*Figure 85. SAN Configuration notebook*
4. The Agent Configuration panel is displayed.

![Agent Configuration panel](image)

**Figure 86. Agent Configuration panel**

The IBM Tivoli Storage Area Network Manager agents discover information about each managed host and its local storage. The host bus adapters on the managed host use in-band discovery protocols to gather information. This panel shows one agent on each managed host. Each agent should be in the **Contacted** state. You can remove an inactive in-band agent by selecting the agent, then click **Remove**.

**Configuring the SNMP agents**

To see the SNMP agents, click on the Switches and Other SNMP Agents tab on the left of the SAN Configuration notebook. The Switches and Other SNMP Agents panel is displayed.
The SNMP agents use out-of-band discovery protocols using SNMP queries on a TCP/IP connection to gather topology and attribute information. To add an SNMP agent, follow this procedure:

1. Click Add.

2. The Enter IP Address dialog is displayed. Enter an IP address or name and click OK.

3. The SNMP agent is added to the list of SNMP agents. The state of the agent should be Contacted. Click OK. If you do not see a Contacted state, verify that the IP address or name is correct. Then verify that the switch actually supports out-of-band discovery.

**Note:** The Advanced button is valid only for Brocade® switches. When you select an agent on the Agent Configuration panel, then click the Advanced button, it will require you to enter a user ID and password for the Brocade switch. You must enter the log in information for the “admin” account on the Brocade Switch. All other accounts will not be supported. We recommend that you enter only one or two Brocade admin passwords per SAN. For example, if you have 10 switches in a SAN, only enter the advanced properties for two of the switches (instead of 10) to improve performance.
After you enter the user ID and password, and the next poll occurs, check for the following message in the message log:

The user ID or password entered for the outband agent target address <target_address> is incorrect.

If you see this message, reenter the correct user ID and password.

### Setting up the MIB file in Tivoli NetView

After installing Tivoli NetView, you need to create trap entries in the Tivoli NetView trapd.conf file. Do not edit the file manually. This is done through a batch file created by Tivoli NetView’s mib2trap program. The ITSANM.mib file is found on the Tivoli Storage Area Network Manager CD in the /misc/utils directory. Follow these steps:

1. Run the mib2trap program on the ITSANM.mib file. Specify the full path name for a writeable directory when creating the ITSANM.bat file. For example, run this command to create the bat file on the directory tmp:

   ```cmd
   mib2trap c:\tmp\ITSANM.mib c:\tmp\ITSANM.bat
   ```

   You can name the bat file anything you want. This example creates the ITSANM.bat file.

2. Run the ITSANM.bat file.

3. Restart Tivoli NetView and bring up the monitor to see all the events.

### Configuring IBM Tivoli Storage Area Network Manager to send events

IBM Tivoli Storage Area Network Manager provides support for centralized monitoring of events throughout your enterprise. If you use a system such as the Tivoli Enterprise Console or an application that can receive SNMP events, IBM Tivoli Storage Area Network Manager can be easily configured to send events to it. If you are not currently using any centralized management application, you can configure Tivoli NetView to receive SNMP traps. You can keep track of all of the storage network–related events detected by IBM Tivoli Storage Area Network Manager in the Tivoli NetView Event Browser.

Configuring event reporting is a two–phase process. First, you must set the SNMP trap or Tivoli Enterprise Console event destination (or both) in the Event Destination panel to send traps and events. Then you must configure the Tivoli Enterprise Console Server or SNMP application (or both) to receive traps and events.

Devices that support sending SNMP traps can be configured to send the traps to a trap console, such as Tivoli NetView or to IBM Tivoli Storage Area Network Manager. Sending the traps to the Tivoli NetView Console allows you to view trap information. You can then make decisions that are based on vendor specific information included in the trap. Sending the traps to IBM Tivoli Storage Area Network Manager allows automatic rediscoveries as a result of the traps.

During installation, the Tivoli NetView Console is configured to listen for SNMP traps on port 162.

To configure IBM Tivoli Storage Area Network Manager to send SNMP trap or Tivoli Enterprise Console events to the appropriate locations, follow these steps:

1. Open the Tivoli NetView Console icon on your desktop.
2. From the Tivoli NetView menu, click:
   SAN ➔ Configuration

3. The Storage Area Network Manager Configuration panel is displayed. Click Configure Manager.

4. The SAN Configuration notebook is displayed. Click the Set Event Destination tab on the left.

5. The Set Event Destination panel is displayed.

![Set Event Destination panel](image)

Figure 88. Set Event Destination panel

6. The top part of the panel allows you to set the SNMP event destination. When you enter an IP address, Port, and Community, the Add and Delete buttons are active. The fields you can set are as follows:

   **IP Address**
   IP address of a host or device that can receive SNMP traps.

   **Port**
   Port number that the host or device will use to listen for SNMP traps. The default is 162.

   **Community**
   Name of the community to which your SNMP host or device is assigned. The default is Public.
Use the Add button to add an SNMP event destination to the list box on top. Use the Delete button to delete an SNMP event destination from the list.

If you select Yes to enable Tivoli Enterprise Console logging, you will be able to enter information into these fields:

**IBM Tivoli Enterprise Console**
This is the IP address of your Tivoli Enterprise Console server. This is required if you are using the Tivoli Enterprise Console.

**Tivoli Enterprise Console Server Port**
This is the port number of your Tivoli Enterprise Console server. This is required if you are using the Tivoli Enterprise Console.

7. Once you have completed entering your information, click OK.

---

**Configuring devices to send events to the Tivoli Enterprise Console**

The Tivoli Enterprise Console product is a powerful, rules-based event management application that integrates network, systems, database, and application management. This supports path 3 as shown in Figure 82 on page 104.

In this case, the SNMP console is the Tivoli Enterprise Console. The product offers a centralized, global view of your computing enterprise while ensuring the high availability of your application and computing resources. The Tivoli Enterprise Console product collects, processes, and automatically responds to common management events. Common management events include occurrences such as a database server that is not responding, a lost network connection, or a successfully completed batch processing job. Tivoli Enterprise Console acts as a central collection point for alarms and events from a variety of sources. Sources include alarms and events from Tivoli applications, Tivoli partner applications, custom applications, network management platforms, and relational database systems.

Tivoli Enterprise Console lets you effectively process the high volume of events in a client/server environment by doing the following:
- Prioritize events by their level of importance
- Filter redundant and low-priority events
- Correlate events with other events from different sources
- Determine who should view and handle specific events
- Initiate automatic corrective actions, when appropriate

For more information about the Tivoli Enterprise Console, see Tivoli Enterprise Console User's Guide.

Many devices in your storage network can be configured to send SNMP traps to port number 162. Configure those individual devices to point to the machine that is running the Tivoli Enterprise Console. If you also configured Tivoli Storage Area Network Manager to send SNMP traps to the Tivoli Enterprise Console, then this configuration tracks all the SNMP traps in your storage network. This can be done from one console.

---

**Configuring the Tivoli Enterprise Console to receive IBM Tivoli Storage Area Network Manager events**

To configure the Tivoli Enterprise Console to receive IBM Tivoli Storage Area Network Manager events, follow these steps. The ITSANM_120.baroc file is found on the IBM Tivoli Storage Area Network Manager CD in the /misc/utils directory.

1. In the Tivoli Enterprise Console, click Configuration from the menu bar.
2. Right-click on Operators. Add yourself as the operator. Operators are users who view, acknowledge, and close events received by the event server.

3. Create an event group named ITSANM_Event_Group. Event groups are used to organize event data into different views. Groups are often used to group events logically by types, for example, Network, or Security. Event groups are primarily a means of organizing and controlling access to events. For more information about setting up event groups and configuring event consoles, see the online help provided with the Tivoli Enterprise Console product.

4. Create an event console named ITSANM_Console.

5. Assign the ITSANM_Event_Group to the event console.

6. Assign all the roles to the Tivoli Enterprise Console: super, senior, admin, and user. Assign yourself as the operator.

7. Click the following to see the event summary:
   
   Windows ➔ Summary Chart View

   Double-click on this view to bring up the Event Viewer that contains a list of all events received. You can click on each event to view the details.

8. Click the following to see the priority view:
   
   Windows ➔ Priority View

   Double-click on this view to bring up the Event Viewer that contains a list of all events received. You can click on each event to view the details.

To see the Tivoli Storage Area Network Manager events, follow these steps:

1. On the Tivoli desktop, right-click on the following:
   
   EventServer ➔ Rulebases

2. Create a new rule base by clicking the following:
   
   Create ➔ Rule Base option

   Name the rule base option. For example, use the name MyStorage. Save this option to a directory on the local machine.

3. Copy the default rule base to the MyStorage rule base. Right-click on the default rule base and select the copy option. Select MyStorage as the destination rule base. Select the Copy rules and Copy classes options.

4. Import the ITSANM_120.baroc file. Right-click on the MyStorage rule base and select the import option.

5. In the Import Info Rule base dialog, select Import Class Definitions.

6. Select the ITSANM_120.baroc file by using the file browser.

7. Insert the imported class file at the end of all the baroc files listed in the list box.

8. Compile the MyStorage rule base. Right-click on the MyStorage rule base and select the compile option.

9. Load the MyStorage rule base.

10. Shut down and restart the EventServer.

11. You will now receive all of the Tivoli Storage Area Network Manager events in the event viewer.
IBM Tivoli Storage Area Network Manager events

The different types of classes of events that an event server can receive are defined in Basic Recorder of Objects in C (BAROC) files. These files are sometimes referred to as event class definition files. These classes are stored in a rule base. When an event is received by the event server, the event’s class is compared to those stored in the active rule base. If the event class exists in the rule base, the event is accepted as valid by the event server. If the class does not exist in the rule base, the event is discarded.

An event adapter determines the class of an event before sending it to an event server. As a native event is received at the source monitored by an adapter, the adapter builds an event instance of the event class that corresponds to the native event. This is based on event class information defined in a BAROC file.

Event classes are organized in a hierarchy. At the top of the hierarchy is the base event class named EVENT. The subclasses inherit their attribute definitions from the base class as well as define new attributes.

The IBM Tivoli Storage Area Network Manager event classes and attributes are shown in Table 20 on page 219.

Configuring IBM Tivoli Storage Area Network Manager for iSCSI discovery

Before you can perform the iSCSI discovery, you must first enable the IP network discovery. Be aware that when you turn on the IP network discovery, there can be a lot of activity depending on how many devices you have in your network.

IBM Tivoli Storage Area Network Manager provides basic support for iSCSI device discovery and monitoring through Tivoli NetView. IBM Tivoli Storage Area Network Manager requires the following for iSCSI discovery:

- The device must have iSCSI MIB and SNMP support.
- The device should be configured so that the iSCSI MIB support is active. Some devices do not automatically activate iSCSI support (for example, iSCSI switch routers). Configuration can be done through the device’s configuration management interface.
- The iSCSI device must be discovered first as an IP device before nvsniffer can discover it as an iSCSI device.

Enabling the IP network discovery

To enable the IP network discovery, follow these steps:

1. Open the Tivoli NetView Console on your desktop.
2. To enable certain advanced features in NetView, first enable the Advanced Menu feature in the Options pull-down menu. Shut down and restart NetView for the changes to take effect.
3. From the Tivoli NetView menu, select:
   Options ➔ Polling
4. The Polling Options panel is displayed. Select Poll All Nodes. Click OK.
Starting the iSCSI discovery

To start the iSCSI discovery, follow the steps below. Note that if you are already running an iSCSI discovery, starting the iSCSI discovery again will launch another instance of the `nvsniffer` program. The default polling time is every 60 minutes. If you want to change the polling time, see the `nvsniffer` command in *IBM Tivoli Storage Area Network Manager User’s Guide*.

To start the iSCSI discovery, follow these steps:

1. Go to the Tivoli NetView menu and select:
   
   Tools -> iSCSI Operations -> Discover all iSCSI Devices

   You only need to start the iSCSI discovery once. If you select this option a second time, you will have multiple discoveries in progress. This action could produce unexpected results.

![Figure 91. Starting iSCSI discovery](image)

2. The discovery process creates a SmartSet. For an example of a SmartSet, see [Figure 92](image). Double–click on the iSCSI to view its members.

![Figure 92. Example of iSCSI SmartSet](image)

3. Double–click on the iSCSI SmartSet and you will see the iSCSI device.
Stopping the iSCSI discovery

To stop the iSCSI discovery, use the Windows `at` command. An example of the `at` command is as follows:

```
at <job_ID> /d
```

Where `job_ID` is the ID of the iSCSI discovery job (`nvsniffer` program) you want to stop. You must stop all instances of the `nvsniffer` programs that are running. You can run a separate `at` command for each program you want to stop.

You can get the `job_ID` by clicking on the task bar, then click `Task Manager`. Click on the Processes tab. Find `nvsniffer.exe`. The PID column identifies the `job_ID` of `nvsniffer.exe` for use in the `at` command. You can also stop `nvsniffer.exe` on the Task Manager panel by highlighting it, then right-click it, then click `End Process`.

For information on how to reschedule the iSCSI discovery, see the `nvsniffer` command in IBM Tivoli Storage Area Network Manager User's Guide.

### iSCSI MIB files (optional step)

This is an optional step and is required only if you want to view the iSCSI MIB files. The iSCSI MIB files are placed in the `\usr\ov\snmp_mib` directory. These files are not loaded into Tivoli NetView at installation time. You have to explicitly load these MIB files using the NetView MIB loading function. The purpose of loading a MIB is to define the MIB objects so the NetView program’s applications can use those MIB definitions. The MIBs you are interested in must be loaded on the system where you want to use the MIB Data Collector or MIB Tool Builder. You cannot load all the iSCSI MIB files into Tivoli Netview at one time. You must delete the current file before you load the next one.

The MIB files should be loaded in the following order:

- iSCSI MIB
- iSCSI Auth MIB
- FC_MGMT MIB
- iSNS MIB

You should load the appropriate level of the iSCSI MIB file that matches the level of iSCSI MIB support in the corresponding iSCSI device that you want to browse.

To load or unload MIBs, follow these steps:

1. Open the Tivoli NetView Console icon on your desktop.
2. From the Tivoli NetView menu, select:
   ```
   Tools → MIB → Loader SNMP V1
   ```
3. The MIB Loader panel is displayed. To load a MIB, click the `Load` button. To unload a MIB, select a MIB, then click `Unload`.
4. If you are loading a MIB, the Load panel is displayed. Highlight the MIB you want and click `Open`.

Configuring IBM Tivoli Storage Area Network Manager for EDFI

The EDFI function performs predictive failure analysis on the Fibre Channel SAN interconnect links, looking for potential problems. To use the EDFI function, it needs to be configured properly. You must first load a rule set and then start EDFI. You can select the appropriate rule set for your enterprise.
It is strongly recommended that EDFI be disabled during SAN hardware installation and reconfiguration. This will prevent false error events from appearing in the EDFI properties logs as well as the NetView icons.

**Loading a rule set**

A key aspect of EDFI configuration is the rule set. Rule sets contain the specific thresholds and policies used by the predictive failure analysis and associated fault isolation functions of IBM Tivoli Storage Area Network Manager. Hardware products change frequently and rule sets allow IBM Tivoli Storage Area Network Manager to keep up with all the specific changes needed for EDFI. It is recommended that the rule sets available with IBM Tivoli Storage Area Network Manager be checked against the recommended rule sets available on the IBM Tivoli Storage Area Network Manager support site. If the site recommends a different rule set, it should be copied to the appropriate directory on the manager machine. After the rule set is in the appropriate directory, the rule set automatically appears in the list of rule sets available for selection.

If a new rule is copied into the correct directory and does not appear in the list of rules available for selection, it might have been corrupted. The EDFI consistency checks search for corrupted rules. Corrupted rules will result in an entry in the msgITSANM.log file.

For Windows, the rule set is placed in the `<install_dir>\conf\edfi` directory. For example:

`C:\tivoli\itsanm\manager\conf\edfi`

For AIX, an example of the directory for the rule set is as follows:

`/tivoli/itsanm/manager/conf/edfi`

Rule sets are identified using these fields:

**State**

State is defined as:

- **Active**
  The rule set with the active state is currently being used by EDFI. Only one rule set can be active at a given time.

- **Not Active**
  The rule set is not selected and is currently not being used by EDFI.

- **Selected**
  The rule set has been selected. Only one rule set can be selected at a time. In the selected state, the rule set is eligible to be made the active rule set by clicking the **Apply** or **OK** button.

**File**

Name of the file on the local file system.

**Version**

The version number of the rule set. The version number is in the format of `XX.YY.ZZ`, where:

- **XX** – is the major revision number.
- **YY** – is the minor revision number.
- **ZZ** – is the incremental revision number.

**Rule Set Description**

Short name identifying the rule set. This description describes the unique characteristics of the rule set.
Starting and stopping EDFI

To start EDFI, follow these steps:

1. Open the Tivoli NetView Console icon on your desktop. From the Tivoli NetView menu, select:
   SAN ➤ Configuration

2. The Storage Area Network Manager Configuration panel is displayed. Click Fault Management Settings.

Figure 93. Tivoli NetView menu

Figure 94. Storage Area Network Manager Configuration panel
3. The EDFI Configuration notebook is displayed. Click the **Configure** tab on the left. Make sure that the Enable Error Detection and Fault Isolation radio button is selected. Click **OK** or **Apply**.

![Figure 95. EDFI Configuration notebook](image)

When EDFI identifies faulty hardware, it puts a notification in the EDFI properties log. To view the log, click the **Properties** tab on the left of the EDFI Configuration notebook.

To stop EDFI, do the following:

1. Open the Tivoli NetView Console icon on your desktop. From the Tivoli NetView menu, select:
   
   SAN ➔ Configuration

2. The Storage Area Network Manager Configuration panel is displayed. Click **Fault Management Settings**.

3. The EDFI Configuration notebook is displayed. Click the **Configure** tab on the left and clear the Enable Error Detection and Fault Isolation radio button. Click **OK** or **Apply** to commit the change.

**Note:** To avoid false error notifications appearing in the SAN, disable EDFI during SAN hardware installation and reconfiguration.

**Selecting a rule set**

To select a rule set, follow these steps:

1. Open the Tivoli NetView Console icon on your desktop. From the Tivoli NetView menu, select:
   
   SAN ➔ Configuration

2. The Storage Area Network Manager Configuration panel is displayed. Click **Fault Management Settings**.

3. The EDFI Configuration notebook is displayed. Click the **Configure** tab on the left.

4. Once the rule set is in the appropriate directory, the rule set will automatically appear in the list of rule sets available for selection. See **Figure 95** On the EDFI
Configuration Properties panel, highlight the desired rule set, then click on the Select button. Then click OK or Apply to commit the change.

5. You can view a rule set by highlighting a rule set on the EDFI Configuration Properties panel, then click the View button. The EDFI Rules panel is displayed. An example of a rules panel is shown in Figure 96.

![Figure 96. Example of EDFI Rules panel](image)

**EDFI event reporting**

EDFI generates standard Tivoli Enterprise Console events that can be used for reporting purposes. The event types for EDFI are:

**EDFI service start**
This event is issued when EDFI has been started successfully.

**EDFI service stop**
This event is issued when EDFI has been stopped.

**EDFI device notification**
This event is issued when EDFI has a notification to report.

**EDFI device notification clear**
This event is issued when the event has been cleared.

The object identifiers (OIDs) for these events are as follows:

<table>
<thead>
<tr>
<th>Event</th>
<th>OID</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDFI service start</td>
<td>1.3.6.1.4.1.2.6.173.5.1</td>
</tr>
<tr>
<td>EDFI service stop</td>
<td>1.3.6.1.4.1.2.6.173.5.2</td>
</tr>
<tr>
<td>EDFI device notification</td>
<td>1.3.6.1.4.1.2.6.173.3.36</td>
</tr>
<tr>
<td>EDFI device notification clear</td>
<td>1.3.6.1.4.1.2.6.173.3.36</td>
</tr>
</tbody>
</table>

For more information about EDFI error reporting and setting up event reporting, see *IBM Tivoli Storage Area Network Manager User’s Guide*. 
Configuring a SAN without managed hosts

There are cases where there may be no agents on the SAN. These cases are:

- The hosts do not currently have an agent installed.
- The host operating system is not supported by the IBM Tivoli Storage Area Network Manager agent.
- The customer requirements do not require the deployment of an IBM Tivoli Storage Area Network Manager agent (topology map only).

In these cases, it is recommended that an agent be installed on the IBM Tivoli Storage Area Network Manager (manager component) itself. This allows IBM Tivoli Storage Area Network Manager to use advanced features like Remote Node Identification (RNID) and device EDFI data collection which requires an agent. See Figure 97.

Normally the manager does not have a Fibre Channel host bus adapter. In this configuration, the following steps are taken:

1. A Fibre Channel host bus adapter is added to the manager.
2. An agent is installed on the manager. (The manager is installed first.).
3. All storage devices are verified to ensure that they use LUN masking techniques. The LUN masking techniques prevent IBM Tivoli Storage Area Network Manager from accessing the disks used by the host systems.
4. The Fibre Channel host bus adapter is attached to the SAN to be managed. This host is added to each zone that is intended to be managed by IBM Tivoli Storage Area Network Manager.

Figure 97. IBM Tivoli Storage Area Network Manager – managing a SAN without managed hosts
Chapter 10. Upgrading IBM Tivoli Storage Area Network Manager

This section describes how to upgrade IBM Tivoli Storage Area Network Manager from version 1.2.0, 1.2.1, or 1.2.2 to version 1.3.0. An upgrade from version 1.1 to 1.3 is not supported. To upgrade from version 1.1 to 1.3, you can perform one of the following steps:

- Uninstall version 1.1 and then install version 1.3.
- Upgrade from version 1.1 to 1.2, then upgrade from 1.2 to 1.3.

If you want to use the same database as version 1.2, you must specify the same name of the database and the DB2 user ID and password that you specified when you installed the previous version.

Upgrading the Bonus Pack for SAN Management

If you have installed the Bonus Pack for SAN Management and want to upgrade to the full version of IBM Tivoli Storage Area Network Manager, follow the directions for installing the product in Chapter 4, “Installing the Windows manager,” on page 31 or Chapter 6, “Installing the AIX manager,” on page 75.

Upgrading the Try and Buy license

If you have installed the Try and Buy product and want to upgrade to the full version of IBM Tivoli Storage Area Network Manager, follow the directions for installing the product in Chapter 4, “Installing the Windows manager,” on page 31 or Chapter 6, “Installing the AIX manager,” on page 75.

Upgrading the Windows manager

To upgrade the Windows manager, follow these steps:

1. You must have a DB2 administrator ID to upgrade Tivoli Storage Area Network Manager.

2. If you have not installed DB2 FixPak 10a, install it now. See “Upgrading DB2 with FixPak 10a” on page 27. If you have FixPak 9 installed, IBM Tivoli Storage Area Network Manager will support it.

3. If you have Tivoli NetView 7.1.3 installed, ensure that the following applications are stopped:
   - Web Console
   - Web Console Security
   - MIB Loader
   - MIB Browser
   - Netmon Seed Editor
   - Tivoli Event Console Adaptor Configurator

   Also ensure that you do not have the Windows 2000 Terminal Services running.

4. Insert the Tivoli Storage Area Network Manager (Manager) CD into the CD-ROM drive. If Windows autorun is enabled, the installation program should start automatically. If the program does not start automatically, open
Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD-ROM drive. Double-click on setup.exe.

5. The Select a language panel is displayed. Select a language from the drop-down list and click OK. This is the language that is used for upgrading this product.

![Select a language panel](image1.png)

*Figure 98. Select a language panel*

6. The Welcome panel is displayed. Click Next to continue.

![Welcome panel](image2.png)

*Figure 99. IBM Tivoli Storage Area Network Manager Welcome panel*

7. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the I accept the terms in the license agreement radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing Tivoli Storage Area Network Manager.
8. The Manager Information panel is displayed. This panel prompts you to stop the manager. Click **Next** to stop the manager.

**Figure 100. Software License Agreement panel**

**Figure 101. Manager Information panel**
9. The Port Number panel is displayed. This panel uses the same information you entered when you installed the previous product. Click Next to continue.

![Port Number panel](image)

*Figure 102. Port Number panel*
10. The DB2 Administrator User ID and Password panel is displayed. For information about this DB2 administrator user ID, see Table 9 on page 32. Enter the DB2 administrator ID and enter the password twice. Make sure that your password has not expired. Click Next to continue.

Note:
- If you are using the AIX manager, this user ID and password is for the DB2 instance owner (for example, db2inst1).

![DB2 Administrator User ID and Password panel](image-url)

*Figure 103. DB2 Administrator User ID and Password panel*
11. The User ID and Password for WebSphere panel is displayed. Enter the user ID and password that you used when you installed the previous product.

Note:

- If you are using the DB2 database and elected to use the DB2 administrator user ID password for WebSphere, this panel is not displayed.

Figure 104. User ID and Password for WebSphere panel
12. The Password for Host Authentication panel is displayed. This panel uses the same information you entered when you installed the previous product. This same password must be used for all managed hosts and remote consoles that communicate with this manager. For information about this password, see Table 9 on page 32. Click Next to continue.

Note:

- If you are using the DB2 database and elected to use the DB2 administrator password for host authentication, this panel is not displayed.

![Image of Password for Host Authentication panel]

*Figure 105. Password for Host Authentication panel*
13. The Tivoli Storage Area Network Manager Install panel is displayed. Click Next to continue.

![Image of Tivoli Storage Area Network Manager Install panel](image)

**Figure 106. Tivoli Storage Area Network Manager Install panel**

14. The Tivoli Storage Area Network Manager Status panel is displayed. This can take about 15–20 minutes to complete. You will see other command prompt windows open and close as the installation continues.

15. When the installation has completed, the Successfully Installed panel is displayed.

   If the correct version of Tivoli NetView was installed before you installed the manager, you will see the Finish button. (Tivoli NetView will not be installed with the manager.) You will not see the next panel to prompt you to restart the system.

   If Tivoli NetView was not previously installed and is installed with this installation of the manager, the next panel is displayed. This panel prompts you to restart the system.

   Click Finish or Next to continue.
16. The Restart Your Computer panel is displayed. To restart your computer, click **Yes, restart my system**. Click **Finish** to complete the installation.

17. After your system is restarted, the Tivoli Storage Area Network Manager service is automatically started.
Upgrading the remote console

Follow these steps to upgrade the remote console:

1. Make sure that the following applications are stopped:
   - Web Console
   - Web Console Security
   - MIB Loader
   - MIB Browser
   - Netmon Seed Editor
   - Tivoli Event Console Adaptor Configurator

2. Insert the Tivoli Storage Area Network Manager (Remote Console) CD into the CD–ROM drive. If Windows autorun is enabled, the installation program should start automatically. If the program does not start automatically, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD–ROM drive. Double–click on setup.exe.

3. The Select a language panel is displayed. Select a language from the drop–down list and click OK. This is the language that is used for upgrading this product.

4. The Welcome panel is displayed. Click Next to continue.
5. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the I accept the terms in the license agreement radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing IBM Tivoli Storage Area Network Manager.

6. The Console Information panel is displayed. This panel prompts you to stop the remote console. Click Next to stop the remote console.
7. The Port Number panel is displayed. This panel uses the same information you entered when you installed the previous product. For information about port numbers, see Table 7 on page 20. Click Next to continue.

8. The Password for Host Authentication panel is displayed. This panel uses the same information you entered when you installed the previous product. This password must use the same password as the manager this remote console
communicates with. For information about this password, see Table 9 on page 32.

Click Next to continue.

Figure 114. Password for Host Authentication panel

9. The Install Confirmation panel is displayed. Confirm that the specified directory is where you want to install the console. Click Next to continue.

Figure 115. Install Confirmation panel

10. The Status panel is displayed. This will take about 15–20 minutes.
11. When the installation has completed, the Successfully Installed panel is displayed. Click **Next** to continue.

![Successfully Installed panel](image1)

**Figure 116. Successfully Installed panel**

12. The Restart Your Computer panel is displayed. To restart your computer, click **Yes, restart my system**. Click **Finish** to complete the installation.

![Restart Your Computer panel](image2)

**Figure 117. Restart Your Computer panel**
13. After rebooting your computer, check to see if the Tivoli Storage Area Network Manager console service has been started. Click the following:

Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔
Services (NT Services) ➔ ITSANM - Console

Upgrading the agents

This section describes how to upgrade the agents on different platforms.

Upgrading the agent on Windows

To upgrade the agent on Windows, follow these steps:

1. Insert the Tivoli Storage Area Network Manager Agents CD into the CD–ROM drive. Go to the agent directory and double-click on setup.exe.
2. The Select a language panel is displayed. Select a language from the drop-down list and click OK. This is the language that is used for upgrading this product.

![Select a language panel](image)

Figure 118. Select a language panel

3. The Welcome panel is displayed. Click Next to continue.

![Welcome panel](image)

Figure 119. Tivoli Storage Area Network Manager Welcome panel

4. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select...
I accept the terms in the license agreement radio button. Click Next to continue. If you do not accept the terms of the license agreement, the installation program will end without installing the Tivoli Storage Area Network Manager agent.

Figure 120. License Agreement panel

5. The Agent Information panel is displayed. This panel prompts you to stop the managed host. Click Next to stop the agent.

Figure 121. Agent Information panel
6. The Port Number panel is displayed. This panel uses the same information you entered when you installed the previous product. Click Next to continue.

Figure 122. Port Number panel

7. The Password for Host Authentication panel is displayed. This panel uses the same information you entered when you installed the previous product. This password must use the same password as the manager this managed host communicates with. For information about this password, see Table 9 on page 32. Click Next to continue.

Figure 123. Password for Host Authentication panel
8. The Confirmation panel is displayed. Click **Next** to finish.

**Note:** For UNIX systems, the directory path is `/tivoli/itsrm/agent`. Note that the default directory path for version 1.1.0 or 1.1.1 was `c:\tivoli\itsrm\agent`.

9. The Status panel is displayed.
10. When installation is complete, the Successfully Installed panel is displayed. Click **Finish** to complete the installation.
11. The agent service is automatically started after installation.

**Upgrading the agent on AIX**

You must have root authority to upgrade the agent. Follow these instructions to upgrade the Tivoli Storage Area Network Manager agent:

1. Insert the IBM Tivoli Storage Area Network Manager Agents CD into the CD–ROM drive.

2. Use these commands to determine the mount directory and run the install script. The install upgrade script is in the **agent** directory. Run these commands:

   ```
   mkdir /cdrom
   mount -v/cdroms' -r'' /dev/cd0 /cdrom
   cd /cdrom/agent
   ./setup.aix
   ```

3. Follow the directions on the installation panels starting with step 2 on page 139.

4. The agent service is automatically started after installation.

**Upgrading the agent on Solaris**

You must have root authority to upgrade the agent. Follow these instructions to upgrade the Tivoli Storage Area Network Manager agent:

1. Insert the IBM Tivoli Storage Area Network Manager Agents CD into the CD–ROM drive.

2. You must mount the drive manually. The install upgrade script is in the **agent** directory. Use these commands to determine the mount directory (for example, `/cdrom/agent`) and run the install script:

   ```
   df -k            (to look for mounted system)
   cd /cdrom/agent
   ./setup.sol     (this is for Solaris)
   ```
3. Follow the directions on the installation panels starting with step 2 on page 139.

4. The agent service is automatically started after installation.
Chapter 11. Installing the Language Pack

The Language Pack allows you to see messages, online help, and text in a different language other than English. Before you install the Language Pack, you must first install IBM Tivoli Storage Area Network Manager. The Language Pack requires 40 MB of temporary disk space for each component: The manager, the managed host, and the remote console.

This section provides information about the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to install the Language Pack on Windows</td>
<td>“Installing the Language Pack on Windows”</td>
</tr>
<tr>
<td>How to install the Language Pack on the AIX manager</td>
<td>“Installing the Language Pack on the AIX manager” on page 153</td>
</tr>
<tr>
<td>How to install the Language Pack on the remote console</td>
<td>“Installing the Language Pack on the remote console” on page 154</td>
</tr>
<tr>
<td>How to install the Language Pack on the managed host</td>
<td>“Installing the Language Pack on the managed host” on page 154</td>
</tr>
<tr>
<td>How to uninstall the Language Pack</td>
<td>“Uninstalling the Language Pack” on page 156</td>
</tr>
</tbody>
</table>

Installing the Language Pack on Windows

The Language Pack also installs the Tivoli NetView Language Kit on the manager and remote console.

To install the Language Pack, follow these steps:

1. If you are installing the Language Pack on the manager, stop the manager service. To stop the manager service, click:
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services

   The Services panel is displayed. Right-click on IBM WebSphere Application Server V5 – ITSANM-Manager. Click Stop.

2. If you are installing the Language Pack on the remote console, you only need to stop the console. If you are installing the Language Pack on the manager, you also need to stop the console.

   On the Services panel, right-click on ITSANM – Console. Click Stop. Also stop the Tivoli NetView service.

3. Insert the IBM Tivoli Storage Area Network Manager Language Pack CD into the CD-ROM drive. If Windows autorun is enabled, the installation program should start automatically. If the program does not start automatically, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager Language Pack CD–ROM drive.

4. On the CD–ROM drive directory, double-click on setup.exe.
5. The Select a Language panel is displayed. Select a language from the drop-down box and click OK. This is the language that is used for installing this product.

![Select a Language panel]

Figure 126. Select a Language panel

6. The Welcome panel is displayed. Click Next to continue.

![Welcome panel]

Figure 127. Welcome panel
7. The Software License Agreement panel is displayed. Read the terms of the license agreement. If you agree with the terms of the license agreement, select the **I accept the terms in the license agreement** radio button. Click **Next** to continue. If you do not accept the terms of the license agreement, the installation program will end without installing IBM Tivoli Storage Area Network Manager Language Pack.

![Software License Agreement panel](image)

*Figure 128. Software License Agreement panel*
8. The Directory Name panel is displayed. The directory and path names must not contain spaces or hyphens. Enter a different directory name or accept the default directory name. The installation program creates the default directory name if one does not already exist. Click Next to continue.

**Note:** The UNIX path name on the panel is different from the Windows path name. For example, for UNIX, the path name would be /tivoli/itsanm/LangPacks.

![Figure 129. Directory Name panel](image)

IBM Tivoli Storage Area Network Manager: Planning and Installation Guide
9. The Select the Features panel is displayed. The information on this panel changes depending on what component you are installing and what languages are installed on your system.

If you are installing the Language Pack for the manager, check the boxes for Manager and the languages you want IBM Tivoli Storage Area Network Manager to be in.

If you are installing the Language Pack for the managed host, check the boxes for Agent and the languages you want IBM Tivoli Storage Area Network Manager to be in. If you have an agent and the manager on the same machine, you can install the Language Pack for both components at the same time.

If you are installing the Language Pack for the remote console, check the boxes for Remote Console and the languages you want IBM Tivoli Storage Area Network Manager to be in. Click Next to continue.

![Select the Features panel](image)

*Figure 130. Select the Features panel*
10. The Language for Tivoli NetView panel is displayed. This panel allows you to choose a language you want the Tivoli NetView information displayed in. Select a choice and click Next to continue.

Note:
- This panel does not appear when you are installing the Language Pack for the AIX manager or the agents.
- Tivoli NetView only ships with the languages listed on the panel.

![Language for Tivoli NetView panel](image)

*Figure 131. Language for Tivoli NetView panel*
11. The Information panel is displayed. This panel displays your installation choices. Review the information and click Next to continue.

**Note:** If you are installing the Language Pack on UNIX, the directory path is different from Windows. For example, the UNIX directory path would be /tivoli/itsanm/LangPacks.

![Information panel](image)
12. The Installation Status panel is displayed. Once installation is complete, you will see the next panel.

*Figure 133. Installation Status panel*
13. The Successfully Installed panel is displayed. Click **Finish** to complete the installation.

![Successfully Installed panel](image)

**Figure 134. Successfully Installed panel**

14. For the Windows manager, restart the ITSANM–Manager and the Tivoli NetView Service through the Windows Services panel.

15. For the remote console, restart the Tivoli NetView Service and ITSANM–Console. From the task bar, click the following:

   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services (NT Services) ➔ Tivoli NetView Service

   Right-click **Tivoli NetView Service**, then click **Start**. Do the same for the ITSANM–Console.

16. For the managed hosts, restart the ITSANM–Agent. To restart the managed hosts, see “Installing the Language Pack on the managed host” on page 154.

---

**Installing the Language Pack on the AIX manager**

To install the Language Pack, follow these steps:

1. Stop the manager service. Go to the working directory and run this command (using the default directory):

   `/tivoli/itsanm/manager/bin/aix/stopSANM.sh`

2. Insert the IBM Tivoli Storage Area Network Manager Language Pack CD into the CD–ROM drive.
3. Use these commands to create the directory, and determine the mount directory. The command also runs the install script. The install script is in the `manager` directory. Run these commands:

```
mkdir /cdrom
mount -v'cdrfs' -r' ' /dev/cd0 /cdrom
cd /cdrom/manager
./setup.aix
```

Note that the `-r` option is followed by two single quotation marks.

4. Follow the directions on the installation panels starting with step 5 on page 146 (Select a Language panel).

5. Restart the manager. To start the manager on AIX, go to the working directory and run this command (using the default directory):

```
/tivoli/itsanm/manager/bin/aix/startSANM.sh
```

## Installing the Language Pack on the remote console

Follow these steps to install the Language Pack on the remote console:

1. Stop the remote console and the Tivoli NetView Service through the Windows Services panel. From the task bar, click on the following:

   ```
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔
   Services (NT Services) ➔ ITSANM–Console
   ```

   Right-click **ITSANM–Console**, then click **Stop**. Do the same for the Tivoli NetView Service.

2. Insert the Tivoli Storage Area Network Manager Language Pack CD into the CD–ROM drive. If Windows autorun is enabled, the installation program should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager Language Pack CD–ROM drive. Double-click on **setup.exe**.

3. Follow the directions on the installation panels starting with step 5 on page 146 (Select a Language panel).

4. For the remote console, restart the Tivoli NetView Service and ITSANM–Console. From the task bar, click the following:

   ```
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔
   Services (NT Services) ➔ Tivoli NetView Service
   ```

   Right-click **Tivoli NetView Service**, then click **Start**. Do the same for the ITSANM–Console.

## Installing the Language Pack on the managed host

This section describes how to install the Language Pack on the managed hosts.

### Installing the Language Pack on Windows

Follow these steps to install the Language Pack on Windows:

1. Stop the agent service. To stop the agent service, click:

   ```
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔
   Services
   ```

   The Services panel is displayed. Right-click on **ITSANM–Agent**. Click **Stop**.

2. Insert the Tivoli Storage Area Network Manager Language Pack CD into the CD–ROM drive. If Windows autorun is enabled, the installation program
should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager Language Pack CD–ROM drive. Double-click on setup.exe.

3. Follow the directions on the installation panels starting with step 5 on page 146 (Select a Language panel).

4. Restart the agent service.
   To restart the agent service, click:
   `Start — Settings — Control Panel — Administrative Tools — Services`

   The Services panel is displayed. Right-click on ITSANM-Agent. Click Start.

**Installing the Language Pack on AIX**

Follow these steps to install the Language Pack on the managed host for AIX:

1. Stop the agent service. To stop the agent service on AIX, go to the working directory and run this command (using the default directory):
   `/tivoli/itsanm/agent/bin/aix/tcstop.sh`

2. Insert the IBM Tivoli Storage Area Network Manager Language Pack CD into the CD–ROM drive.

3. Run these commands to run the install script:
   ```
   mount -v'cdrfs' -r'' /dev/cd0 /cdrom
cd /cdrom
./setup.aix
   ```

4. Follow the directions on the installation panels starting with step 5 on page 146 (Select a Language panel).

5. You must refresh the agent service by restarting it. To restart the agent service on AIX, go to the working directory and run this command (using the default directory):
   `/tivoli/itsanm/agent/bin/aix/tcstart.sh`

**Installing the Language Pack on Solaris**

Follow these steps to install the Language Pack on the managed host for Solaris:

1. Stop the agent service. To stop the agent service, go to the working directory and run this command:
   `/tivoli/itsanm/agent/bin/solaris2/tcstop.sh`

2. Insert the IBM Tivoli Storage Area Network Manager Language Pack CD into the CD–ROM drive.

3. You must mount the drive manually. Use these commands to change to the mount directory and run the install script:
   ```
   cd /cdrom
   ./setup.sol
   ``` (this is for Solaris)

4. Follow the directions on the installation panels starting with step 5 on page 146.

5. Restart the agent service. To restart the agent service, go to the working directory and run this command:
   `/tivoli/itsanm/agent/bin/solaris2/tcstart.sh`

**Installing the Language Pack on Linux**

Follow these steps to install the Language Pack on the managed host for Linux:

1. Stop the agent service. To stop the agent service, go to the working directory and run this command:
   `/tivoli/itsanm/agent/bin/linux/tcstop.sh`
2. Insert the IBM Tivoli Storage Area Network Manager Language Pack CD into the CD-ROM drive.

3. Run the commands below. The commands create the CD-ROM directory, mounts the CD-ROM directory, changes to the agent directory, and then runs the installation script.
   
   ```
   mkdir /cdrom
   mount /dev/cd0 /cdrom
   cd /cdrom/agent
   ./setup.lin
   ```

4. Follow the directions on the installation panels starting with step 5 on page 146.

5. Restart the agent service. To restart the agent service, go to the working directory and run this command:
   
   ```
   /tivoli/itsanm/agent/bin/linux/tcstart.sh
   ```

---

### Uninstalling the Language Pack

**Note:** For Windows manager and remote console: Uninstalling the IBM Tivoli Storage Area Network Manager Language Package does not uninstall the Tivoli NetView Language Kit.

To uninstall the Language Pack, follow these steps:

1. For the Windows manager, stop the ITSANM–Manager service and the Tivoli NetView Service using the Windows Services panel.
   
   For the AIX manager, stop the manager from the working directory (using the default directory):
   
   ```
   /tivoli/itsanm/manager/bin/aix/stopSANM.sh
   ```

2. If you are uninstalling the Language Pack for the remote console, stop the Tivoli NetView Service and then the ITSANM–Console service through the Windows Services panel.

3. If you are uninstalling the Language Pack for the managed host, stop the ITSANM–Agent service. For information on stopping ITSANM–Agent, see “Installing the Language Pack on the managed host” on page 154.

4. From the directory where you installed the Language Pack, run these programs:
   
   - For Windows, use the Add/Remove program. From the task bar, click on the following:
     
     Start ➔ Settings ➔ Control Panel
     
     On the Control panel, double-click on **Add/Remove Programs**. Find and highlight the component you want to remove. Click **Remove**.
   
   - For UNIX, run _uninstall. If you used the default directory, you would run this command:
     
     ```
     /tivoli/itsanm/LangPacks/_uninstall
     ```

5. The Select a Language panel is displayed. Select a language and click **OK** to continue.
6. The Welcome panel is displayed. Click **Next** to continue.

**Figure 135. Select a Language panel**

**Figure 136. Welcome panel**
7. The Select the Features panel is displayed. The information on this panel changes depending on what component you are uninstalling and what languages are installed on your system.

If you are uninstalling the Language Pack for the manager, check the boxes for Manager and the languages you want to uninstall.

If you are uninstalling the Language Pack for the managed host, check the boxes for Agent and the languages you want to uninstall.

If you are uninstalling the Language Pack for the remote console, check the boxes for Remote Console and the languages you want to uninstall.

Click Next to continue.

Figure 137. Select the Features panel
8. The Information panel is displayed. This panel displays your installation choices. Review the information and click Next to continue.

Note: If you are uninstalling the Language Pack on UNIX, the directory path is different from Windows. For example, the UNIX directory path would be /tivoli/itsanm/Lang Packs.

![Figure 138: Information panel](image)

9. The prompt for Remove Existing File dialog box is displayed. Select a choice:
   - Yes to remove the current file.
   - Yes to all to remove all files without prompting.
   - No to not remove the current file.
   - No to all to not remove any of the files.
10. The Successfully Uninstalled panel is displayed. Click **Finish** to complete the uninstallation.

![Successfully Uninstalled panel](image)

**Figure 139. Successfully Uninstalled panel**

11. For the Windows manager, start the Tivoli NetView Service and ITSANM service. Run this command (using the default directory):

   ```
   <install_dir>/apps/was/bin/startServer.bat server1
   ```

   For the AIX manager, start the manager by going to the working directory and run this command (using the default directory):

   ```
   /tivoli/itsanm/manager/bin/aix/startSANM.sh
   ```

12. For the remote console, start the Tivoli NetView Service, then start ITSANM–Console through the Windows Services panel.

13. For the managed hosts, restart the agent. For information on restarting the agents, see “Installing the Language Pack on the managed host” on page 154.
Chapter 12. Uninstalling IBM Tivoli Storage Area Network Manager

This section describes how to uninstall IBM Tivoli Storage Area Network Manager on the manager, console, and managed host machines.

Note:

- For Windows manager: If you installed the manager and Tivoli NetView was installed along with the manager, the uninstallation procedure will also uninstall Tivoli NetView. If you installed the manager and Tivoli NetView was not installed with the manager (Tivoli NetView was already installed), then Tivoli NetView will not be uninstalled.
- If you installed the remote console and Tivoli NetView was installed along with the remote console, the uninstallation procedure will also uninstall Tivoli NetView. If you installed the remote console and Tivoli NetView was not installed with the remote console (Tivoli NetView was already installed), then Tivoli NetView will not be uninstalled.
- If you are uninstalling IBM Tivoli Storage Area Network Manager and DB2, you should uninstall the products in this order:
  1. IBM Tivoli Storage Area Network Manager
  2. DB2

This section provides information about the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to uninstall the manager on Windows</td>
<td>“Uninstalling the manager on Windows”</td>
</tr>
<tr>
<td>How to uninstall the manager on AIX</td>
<td>“Uninstalling the manager on AIX” on page 166</td>
</tr>
<tr>
<td>How to uninstall the agents</td>
<td>“Uninstalling the agents” on page 171</td>
</tr>
<tr>
<td>How to uninstall the remote console</td>
<td>“Uninstalling the remote console” on page 167</td>
</tr>
<tr>
<td>How to uninstall DB2</td>
<td>“Uninstalling DB2” on page 174</td>
</tr>
</tbody>
</table>

Uninstalling the manager on Windows

Before uninstalling the manager, close all Tivoli NetView windows. When IBM Tivoli Storage Area Network Manager is installed, it also installs the Tivoli GUID package. This GUID package is not uninstalled when you uninstall IBM Tivoli Storage Area Network Manager. If you plan to reinstall IBM Tivoli Storage Area Network Manager, you should not delete the Tivoli GUID specific files and directories. This can cause IBM Tivoli Storage Area Network Manager to function improperly. The specific files and directories for Tivoli GUID are as follows:

Table 15. Tivoli GUID directories

<table>
<thead>
<tr>
<th>Platform</th>
<th>Directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>/usr/tivoli/guid</td>
</tr>
<tr>
<td>Solaris</td>
<td>/opt/tivoli/guid</td>
</tr>
<tr>
<td>Windows</td>
<td>Program Files\tivoli\guid</td>
</tr>
</tbody>
</table>
Normally you would not uninstall the Tivoli GUID package. However, if you want to have a clean computer, you can uninstall the package manually. For information about uninstalling the Tivoli GUID, see “Uninstalling the Tivoli GUID package” on page 166.

To uninstall the manager, follow these steps:
1. From the task bar, click on the following:
   Start ➤ Settings ➤ Control Panel
2. On the Control Panel, double-click on Add/Remove Programs.
3. Right-click on IBM WebSphere Application Server V5 – ITSANM–Manager.
4. Click Remove.
5. The Select a Language panel is displayed. Select English and click OK.

![Select a Language panel](image)

*Figure 140. Select a Language panel*
6. The Welcome panel is displayed. Click Next to continue.

![Welcome panel](image)

Figure 141. Welcome panel

7. The Location panel is displayed. This informs you of where the manager will be uninstalled from. Click Next to continue.

**Note:** The UNIX path name on the panel is different from the Windows path name. For example, for UNIX, the path name would be `/tivoli/itsanm/manager`.

![Location panel](image)

Figure 142. Location panel
8. The Uninstalling panel is displayed. This step can take some time to uninstall.

![Uninstalling panel](image)

**Figure 143. Uninstalling panel**

9. The prompt for Remove Existing File dialog is displayed.
   - **Yes** to remove the current file.
   - **Yes to all** to remove all files without prompting.
   - **No** to not remove the current file.
   - **No to all** to not remove any of the files.

Select a choice.

![Remove Existing File dialog](image)

**Figure 144. Remove Existing File dialog**
10. The Successfully Uninstalled panel is displayed. Click **Next**.

   ![Successfully Uninstalled panel](image1)

   **Figure 145. Successfully Uninstalled panel**

11. The Restart Your Computer panel is displayed. You can select **Yes** to restart your system now or **No** to restart your system at a later time. You must reboot your system after uninstalling the manager to successfully complete the uninstallation.

   ![Restart Your Computer panel](image2)

   **Figure 146. Restart Your Computer panel**
Uninstalling the Tivoli GUID package

The Tivoli GUID package is used to resolve a computer’s identification. Computers can have multiple domain names, a dynamic IP address that changes, or a host name that changes. The GUID package allows the computer to have a global unique identifier. This assures that one computer that is running multiple applications can be uniquely identified. For example, one computer might be running the Tivoli Storage Manager client and the IBM Tivoli Storage Area Network Manager agent.

Note: You would not normally uninstall the Tivoli GUID package. This information is provided if you wanted to have a clean computer. If you have other Tivoli applications using the GUID package, do not uninstall the GUID package.

To uninstall the Tivoli GUID package on AIX, enter this command:

```
installp -u tivoli.tivguid
```

You can also uninstall the Tivoli GUID package using smitty.

To uninstall the Tivoli GUID package on Solaris, enter this command:

```
pkgrm TIVguid
```

To uninstall the Tivoli GUID package on Windows, follow these steps:
1. Go to the task bar and click:
   - Start ➔ Settings ➔ Control Panel
2. On the Control Panel, double-click Add/Remove Programs.
3. The Add/Remove Programs dialog is displayed. On the Install/Uninstall tab, select TivGUID.
4. Click Remove.

Uninstalling the manager on AIX

When IBM Tivoli Storage Area Network Manager is installed, it also installs the Tivoli GUID package. This GUID package is not uninstalled when you uninstall IBM Tivoli Storage Area Network Manager. If you plan to reinstall IBM Tivoli Storage Area Network Manager, you should not delete the Tivoli GUID specific files and directories. This can cause IBM Tivoli Storage Area Network Manager to function improperly.

To uninstall the manager, follow these steps:
1. The uninstall program is created in the installation directory after the agent has been installed. Run uninstall under the installdir/manager/_uninst directory to uninstall the manager. From the root directory, enter this command:
   ```
   /tivoli/itsanm/manager/_uninst/uninstall
   ```
2. Follow the steps under the Windows uninstallation starting with step 5 on page 162 (the Select a Language panel).
3. You do not need to reboot the system. However, if you want to reuse the manager ports (9550–9556), then you must reboot the system.
Uninstalling the remote console

Before uninstalling the remote console, close all Tivoli NetView windows.

To uninstall the remote IBM Tivoli Storage Area Network Manager Console, follow these steps:

1. From the task bar, click on the following: Start → Settings → Control Panel
2. On the Control Panel, double-click on Add/Remove Programs.
3. Find and highlight ITSANM – Console.
4. Click Remove.
5. The Select a language panel is displayed. Select a language. Click OK.

Figure 147. Select a language panel
6. The Welcome panel is displayed. Click Next to continue.

![Figure 148. Welcome panel](image)

7. The Location panel is displayed. Click Next to continue.

![Figure 149. Location panel](image)
8. The Uninstalling panel is displayed.

![Uninstaller Panel]

Figure 150. Uninstalling panel

9. The prompt for Remove Existing File dialog box is displayed. Select a choice:
   - **Yes** to remove the current file.
   - **Yes to all** to remove all files without prompting.
   - **No** to not remove the current file.
   - **No to all** to not remove any of the files.
10. The Successfully Uninstalled panel is displayed. Click **Next**.

![Successfully Uninstalled panel](image1)

\textit{Figure 151. Successfully Uninstalled panel}

11. The Restart Your Computer panel is displayed. You can select **Yes** to restart your system now or **No** to restart your system at a later time. You must reboot your system after uninstalling the remote console to successfully complete the uninstallation. Click **Finish**.

![Restart Your Computer panel](image2)

\textit{Figure 152. Restart Your Computer panel}
Uninstalling the agents

This section describes how to uninstall the agents on different platforms.

Uninstalling the agent on Windows

To uninstall the agent on Windows, follow these steps:
1. Verify that the agent service has stopped.
2. From the uninstallation directory, double-click on Add/Remove Programs.
3. Find and highlight ITSANM–Agent.
4. Click Remove.
5. The Select a Language panel is displayed. Select a language. Click OK.

Figure 153. Select a Language panel

6. The Welcome panel is displayed. Click Next to continue.

Figure 154. Welcome panel
7. The Uninstall from Directory panel is displayed. Click **Next** to continue.

![Uninstall from Directory panel](image.png)

*Figure 155. Uninstall from Directory panel*

8. The prompt for Remove Existing File dialog box is displayed. Select a choice:
   - **Yes** to remove the current file.
   - **Yes to all** to remove all files without prompting.
   - **No** to not remove the current file.
   - **No to all** to not remove any of the files.

9. The Uninstalling panel is displayed.
10. The Successfully Uninstalled panel is displayed. Click Next.

![Successfully Uninstalled panel](image)

**Figure 156. Successfully Uninstalled panel**

11. The Restart Your Computer panel is displayed. Click **Yes, restart my computer**. Click **Finish**. Your computer will be restarted.

   **Note:** This panel is not displayed for UNIX systems.

![Restart Your Computer panel](image)

**Figure 157. Restart Your Computer panel**
Uninstalling the agent on AIX or Solaris

To uninstall the agent on AIX or Solaris, follow these steps:

1. Verify that the agent service has stopped. Run this command:
   ```
   ps -aef | grep "java.*tsnm.baseDir"
   ```

   If you do not see this entry, the agent service has stopped:
   ```
   root  96498 158924  0 Aug 17 pts/3 24:53 /tivoli/itsanm/agent/jre/bin/java
   -Dtsnm.baseDir=/tivoli/itsanm/agent -Dtsnm.localPort=9570
   -Dtsnm.protocol=http:// -Djlog.noLogCmd=true
   classes:/tivoli/itsanm/agent/servlet/common/lib/servlet.jar:
   com.ibm.mq.jar:/tivoli/itsanm/agent/lib/com.ibm.mqjms.jar:
   jms.jar:/tivoli/itsanm/agent/lib/ServiceManager.jar::
   /tivoli/itsanm/agent/servlet/bin/bootstrap.jar
   -Djavax.net.ssl.keyStore=/tivoli/itsanm/agent/conf/server.keystore
   -Djavax.net.ssl.keyStorePassword=YourServerKeystorePassword
   -Dcatalina.base=/tivoli/itsanm/agent/servlet
   -Dcatalina.home=/tivoli/itsanm/agent/servlet
   org.apache.catalina.startup.Bootstrap start
   root 471386 448550  1 14:35:03 pts/4 0:00
   ```

2. The uninstall program is created in the installation directory after the agent has been installed. Run `uninstall` under the `<installdir>/agent/_uninst` directory to uninstall the agent. From the root directory, enter this command:
   ```
   /tivoli/itsanm/agent/_uninst/uninstall
   ```

3. Follow the steps under the Windows uninstallation starting with step 5 on page 171 (the Select a Language panel).

4. For AIX only: uninstall the AIX protocol driver by issuing this command:
   ```
   # installp -u TSNM.agent
   ```

Uninstalling the agent with Linux

To uninstall the agent with Linux, follow these steps:

1. The uninstall program is created in the installation directory after the agent has been installed. Run `uninstall` under the `<install_dir>/agent/_uninst` directory to uninstall the agent. From the root directory, enter this command:
   ```
   /tivoli/itsanm/agent/_uninst/uninstall
   ```

2. Follow the steps under the Windows uninstallation starting with step 5 on page 171 (the Select a Language panel).

Uninstalling DB2

This section describes how to uninstall DB2 on Windows and AIX.

Uninstalling DB2 on Windows

To uninstall DB2 on Windows, follow these steps:

1. Using DB2, drop the itsanmdb database. Itsanmdb is the default name. If you renamed this database to something else, drop the IBM Tivoli Storage Area Network Manager database. For information about dropping a database, see "Dropping a DB2 database" on page 204.
2. Go to the task bar and click:
   
   Start → Settings → Control Panel

3. On the Control Panel, double-click Add/Remove Programs.

4. The Add/Remove Programs dialog is displayed. On the Install/Uninstall tab, select IBM DB2.

5. Click Add/Remove.

6. The Confirm DB2 deletion dialog is displayed. Click Yes.

![Confirm DB2 deletion dialog](image1)

Figure 158. Confirm DB2 deletion dialog

7. The Information panel is displayed. Click Yes.

![Information panel](image2)

Figure 159. Information panel

8. The Uninstall dialog is displayed. When the uninstall is complete, click OK.

![Uninstall dialog](image3)

Figure 160. Uninstall dialog

9. The Uninstall successful dialog is displayed. Click OK.
10. Make sure that you delete all related DB2 folders.

Uninstalling DB2 on AIX

To uninstall DB2, follow the steps below. The DB2 administration server is assumed to be db2as. You must have root authority to uninstall DB2.

1. Drop all DB2 databases. Each DB2 instance can have one or more databases. Go to each DB2 instance and drop all databases from each instance. Log in as the instance owner. Run these commands:

   su - <Instance_Owner_Name> (log in as the instance owner)
   db2 list application (lists all databases)
   db2 drop db <DB_Name>

   Where Instance_Owner_Name is the DB2 instance (for example, db2inst1). DB_Name is the name of the database to be dropped. After you drop the database, you will see this message:
   DB20000I The DROP DATABASE command completed successfully.

2. Stop the administration server. The default user ID is db2as. To stop the administration server, run these commands:

   su - db2as (log in as the DB2 administrator)
   db2admin stop

   After you stop the administration server, you will see this message:
   SQL4407W The DB2 Administration Server was stopped successfully.

3. Stop all DB2 instances. To get a list of DB2 instances, run this command:

   <DB2_DIR>/bin/db2list

   DB2_DIR is the directory for DB2. The default is /usr/lpp/<DB2_program>
   where DB2_program is the DB2 program, for example, db2_07_01. For each instance in the list, run the following commands:

   su - <Instance_Owner_Name>
   db2 force application all
   db2stop
   db2 terminate

   Instance_Owner_Name is a DB2 instance, for example, db2inst1.

4. Remove the administration server. Run this command from the root directory:

   /usr/lpp/<DB2_program>/instance/dasidrop db2as

   DB2_program is the DB2 program, for example, db2_07_01.

5. Remove all DB2 instances. For each DB2 instance, run the following command:

   <DB2_DIR>/instance/db2idrop <Instance_Name>

Figure 161. Uninstall successful dialog
DB2_DIR is the DB2 directory and Instance_Name is the name of the instance, for example, db2inst1.

6. Remove DB2. Run this command:
   
   ```
   installp -u <DB2_program>
   ```

   Where DB2_program is the name of the DB2 program, for example, db2_07_01.

7. Remove the instance name in the user list (optional, but recommended). Run smit and go to these panels:
   - Security & Users
   - Users
   - Remove a user
   - Remove a User From the System

   Remove the instance name (for example, db2inst1), and Administration Server name (for example, db2as).

8. Reboot the machine (optional, but recommended).
Appendix A. Silent installation of IBM Tivoli Storage Area Network Manager

IBM Tivoli Storage Area Network Manager supports silent, unattended installations. By modifying the appropriate parameters in the options file for the manager, remote console, or managed host, you can then run the script to install the component. If you install IBM Tivoli Storage Area Network Manager using silent installation, you must uninstall the product using silent uninstallation.

Before installing the manager, make sure that you have completed the steps for preinstallation planning work as outlined in Chapter 3, “Preparing for installation (Windows manager),” on page 19 for Windows or Chapter 5, “Preparing for installation (AIX manager),” on page 51 for AIX.

Installing the manager

The options file for the manager is found in the manager installation directory. The options file is named manager.opt. Before you can install the manager, you must change the appropriate parameters in the options file. See Figure 162.

```
# InstallShield Options File Template for Manager silent installation
#
# This file can be used to create an options file (for example, response file) for
# the wizard setup. Options files are used with "-options" on the command line
# to modify wizard settings.
#
# The settings that can be specified for the wizard are listed below. To use
# this template, follow these steps:
#
#   1. Specify a value for a setting by replacing the characters '"<value>"'.
#   2. Save the changes to the file.
#   3. To use the options file with the wizard, specify -options <file-name>
#      as a command line argument to the wizard, where <file-name> is the name
#      of this options file.
#      For example:
#      setup.exe -silent -options manager.opt
#
# Figure 162. Manager.opt file (Part 1 of 4)
```

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The database to use. You can select Cloudscape or DB2.

Specify:
- `W dbChoice.choice=cloudscape`

or
- `W dbChoice.choice=db2`

For this option, DB2 7.2 Fixpak 10a or higher must already be installed on the machine.

---

Base port number for this installation

Example:
- `W portNoBean.portNumber=9550`

---

Single User Screen for DB2 Database

Example:
- `W beanSingleUserWithDB2.chkUserIDPass="0,1,2,3"`

You can put numbers from 0 to 3 by separating them with ",".

For example: "0,2"

where

0 - for DB2 User ID/Password Screen to reuse DB2 Admin UserID/Pass
1 - for WAS Admin ID/Password Screen to reuse DB2 Admin User ID/Pass
2 - for Host Authentication Password Screen to reuse DB2 Admin Pass
3 - for NetView Password Screen to reuse DB2 Admin Pass

---

Single User Screen for Cloudscape Database

Example:
- `W beanSingleUserWithCloudScape.chkUserIDPass="2,3"`

You can put numbers from 2 to 3 by separating them with ",".

For example: "2"

where

2 - for Host Authentication Password Screen to reuse WAS Admin Pass
3 - for NetView Password Screen to reuse WAS Admin Pass

---

Figure 162. Manager.opt file (Part 2 of 4)
# DB2 administrator user ID
# Ignored for cloudscape
# Example:
# -W DBPassword.userID="db2admin"
-W DBPassword.userID="db2admin"

# DB2 administrator password
# Ignored for cloudscape
# Example:
# -W DBPassword.password="password"
-W DBPassword.password="password"

# Name of database to be created and used by SANM (SANM database)
# Ignored for cloudscape
# Example:
# -W SANPassword1.dbName="itsanmdb"
-W SANPassword1.dbName="itsanmdb"

# SANM database user ID, must be different than DB2 administrator user ID
# Ignored for cloudscape
# Example:
# -W SANPassword1.userID="db2user1"
-W SANPassword1.userID="db2user1"

# SANM database password
# Ignored for cloudscape
# Example:
# -W SANPassword1.password="password"
-W SANPassword1.password="password"

Figure 162. Manager.opt file (Part 3 of 4)
Change only the parameters listed below. Do not change any other parameters.

**installLocation**

Specifies the installation destination directory. On Windows, if you want the installation destination directory to be C:/myhost/itsanm/manager, enter the example as follows:

```
-P installLocation="C:/myhost/itsanm/manager"
```

For the AIX manager, enter the example as follows:

```
-P installLocation="/myhost/itsanm/manager"
```

**Note:** This procedure accepts forward or backward slashes for directory paths on a Windows platform.

**dbChoice**

Specifies whether you want to use DB2 or Cloudscape as your database. If you use DB2 as the database, you must install DB2 before you install IBM Tivoli Storage Area Network Manager. To use Cloudscape as your database, enter the example as follows:

```
-W dbChoice.choice=cloudscape
```
To use DB2 as your database, enter the example as follows:
-W dbChoice.choice=db2

**portNoBean**

Specifies the primary port number. If you want the port number to be 9800, enter this example as follows:
-W portNoBean.portNumber=9800

**beanSingleUserWithDB2**

Specifies the user ID and password that you want to use if you elect to use the DB2 database. You must have DB2 installed before you install IBM Tivoli Storage Area Network Manager. You can specify one or more values. If you specify more than one value, the values must be separated by commas. You can specify the following:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Specifies that you want to reuse the DB2 administrator user ID and password for the DB2 user ID and password.</td>
</tr>
<tr>
<td>1</td>
<td>Specifies that you want to reuse the DB2 administrator user ID and password for the WebSphere user ID and password.</td>
</tr>
<tr>
<td>2</td>
<td>Specifies that you want to reuse the DB2 administrator password for the host authentication password.</td>
</tr>
<tr>
<td>3</td>
<td>Specifies that you want to reuse the DB2 administrator password for the Tivoli NetView password.</td>
</tr>
</tbody>
</table>

An example of specifying the DB2 administrator user ID and password for the DB2 user ID and WebSphere user ID is shown as follows:
-W beanSingleUserWithDB2.chkUserIDPass="0,1"

**beanSingleUserWithCloudScape**

Specifies the user ID and password that you want to use if you elect to use the Cloudscape database. You can specify one or more values. If you specify more than one value, the values must be separated by commas. You can specify the following:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Specifies that you want to reuse the WebSphere administrator password for the host authentication password.</td>
</tr>
<tr>
<td>3</td>
<td>Specifies that you want to reuse the WebSphere administrator password for the Tivoli NetView password. If you are installing IBM Tivoli Storage Area Network Manager on AIX, this parameter is ignored.</td>
</tr>
</tbody>
</table>

If you want to use the WebSphere administrator password for the host authentication password, specify the following example:
-W beanSingleUserWithCloudScape.chkUserIDPass="2"

**DBPassword.userID**

Specifies the DB2 administrator user ID. This parameter is ignored if you selected the Cloudscape database.

If you want the DB2 user ID to be **mydb2id**, specify the following example:
-W DBPassword.userID="mydb2id"

**DBPassword.password**

Specifies the DB2 administrator user ID (**mydb2id**) password. This parameter is ignored if you selected the Cloudscape database.

If you want the password to be **mypass**, specify the following example:
SANPassword1.dbName
Specifies the name of the database to be created and used by IBM Tivoli Storage Area Network Manager. The default database name is itsanmdb.

If you want to use the database name of mydb, specify the following example:
-W SANPassword1.dbName="mydb"

SANPassword1.userID
Specifies the database user ID that is different from the DB2 administrative user ID. This parameter is ignored if you selected the Cloudscape database.

If you want to use mydbuser, specify the following example:
-W SANPassword1.userID="mydbuser"

SANPassword1.password
Specifies a password for the database user ID (mydbuser). This parameter is ignored if you selected the Cloudscape database.

If you want to use the password mydbpass, specify the following example:
-W SANPassword1.password="mydbpass"

WASPassword.userID
Specifies a WebSphere user ID. If you want to use mywebid as the user ID, specify the following example:
-W WASPassword.userID="mywebid"

WASPassword.password
Specifies a WebSphere user ID (mywebid) password. If you want to use mywebpass as the password, specify the following example:
-W WASPassword.password="mywebpass"

comPassword
Specifies a password for the manager, managed host, and remote console communication. If you want to use hostcomm as the password, specify the following example:
-W comPassword.password="hostcomm"

beanNVDriveInput
Specifies the drive letter where Tivoli NetView will be installed. This is required for the Windows manager only. If you want to install Tivoli NetView on drive E, specify the following example:
-W beanNVDriveInput.chcDriveName="E"

beanNetViewPasswordPanel
Specifies the password for Tivoli NetView. This is required for the Windows manager only. If you want to use netviewpass as the password, specify the following example:
-W beanNetViewPasswordPanel.password="netviewpass"
How to install the manager

To install the Windows manager using the `manager.opt` file, run this command:

```
setup -silent -options <install_dir>/manager.opt
```

Where `install_dir` is the directory where the options file is located.

To install the AIX manager using the `manager.opt` file, run this command:

```
setup.aix -silent -options <install_dir>/manager.opt
```

Where `install_dir` is the directory where the options file is located.

Installing the agent

The options file for the agent is found in the managed host installation directory. The options file is named `agent.opt`. Before you can install the agent on the managed host, you must change the appropriate parameters in the options file. See Figure 163.

---

```bash
# InstallShield Options File Template for Agent silent installation
#
# This file can be used to create an options file (for example, response file) for
# the wizard setup. Options files are used with "-options" on the command line to
# modify wizard settings.
# The settings that can be specified for the wizard are listed below. To use
# this template, follow these steps:
# 1. Specify a value for a setting by replacing the characters '<value>'.
#    Read the documentation for each setting for information on how
#    to specify its value.
# 2. Save the changes to the file.
# 3. To use the options file with the wizard, specify -options <file-name>
#    as a command line argument to the wizard, where <file-name> is the name
#    of this options file.
# For example:
#   setup.exe -silent -options agent.opt
#
# Select default language
# Example:
#   -P defaultLocale="English"
#   -P defaultLocale="English"
```

---

Figure 163. Agent.opt file (Part 1 of 2)
Change only the parameters listed below. Do not change any other parameters.

installLocation

Specifies the installation destination directory. On Windows, if you want the installation destination directory to be C:\myagent\itsanm\agent, enter the example as follows:

-P installLocation="C:\myagent\itsanm\agent"

For the UNIX agent, enter the example as follows:

-P installLocation="/myagent/itsanm/agent"

Note: This procedure accepts forward or backward slashes for directory paths on a Windows platform.
managerNamePort.managerName

Specifies the fully qualified name of the remote manager machine. If you want the name to be mydivision.mycompany.com, specify the following example:
-W managerNamePort.managerName="mydivision.mycompany.com"

managerNamePort.managerPort

Specifies the port number of the remote manager machine. If you want to use 9800 as the port number, specify the following example:
-W managerNamePort.managerPort=9800

portNoBean

Specifies the primary port number for this managed host. If you want the port number to be 9820, specify the following example:
-W portNoBean.portNumber=9820

comPassword

Specifies a password for the manager, managed host, and remote console communication. If you want to use hostcomm as the password, specify the following example. This password must be the same as the manager machine this managed host communicates with.
-W comPassword.password="hostcomm"

How to install the agent

To install the Windows agent using the agent.opt file, run this command:
setup -silent -options <install_dir>/agent.opt

Where install_dir is the directory where the options file is located.

To install the AIX agent using the agent.opt file, run this command:
./setup.aix -silent -options <install_dir>/agent.opt

Where install_dir is the directory where the options file is located.

To install the Solaris agent using the agent.opt file, run this command:
./setup.sol -silent -options <install_dir>/agent.opt

Where install_dir is the directory where the options file is located.

To install the Linux agent using the agent.opt file, run this command:
./setup.lin -silent -options <install_dir>/agent.opt

Where install_dir is the directory where the options file is located.

Installing the remote console

The options file for the remote console is found in the console installation directory. The options file is named console.opt. Before you can install the console, you must change the appropriate parameters in the options file. See Figure 164 on page 188.
Install Shield Options File Template for Remote Console silent installation

This file can be used to create an options file (for example, response file) for the wizard setup. Options files are used with "-options" on the command line to modify wizard settings.

The settings that can be specified for the wizard are listed below. To use this template, follow these steps:

1. Specify a value for a setting by replacing the characters '<value>'. Read the documentation for each setting for information on how to specify its value.

2. Save the changes to the file.

3. To use the options file with the wizard, specify -options <file-name> as a command line argument to the wizard, where <file-name> is the name of this options file.
   For example:
   setup.exe -silent -options console.opt

Select the default language
Example:
-P defaultLocale="English"

Installation destination directory.
The install location of the product. Specify a valid directory into which the product should be installed. If the directory contains spaces, enclose it in double quotes. For example, to install the product to C:\Program Files\My Product in Windows, use
-P installLocation="C:\Program Files\My Product"
-P installLocation="C:/tivoli/itsanm/console"
-P installLocation="c:/tivoli/itsanm/console"

Specify the fully qualified name of remote manager machine:
Example:
-W beanManagerLocation.HostName="manager.sanjose.ibm.com"
-W beanManagerLocation.HostName="manager.sanjose.ibm.com"

Specify the base port number of remote manager:
Example:
-W beanManagerLocation.PortNo=9550
-W beanManagerLocation.PortNo=9550

Figure 164. Console.opt file (Part 1 of 2)
Change only the parameters listed below. Do not change any other parameters.

**installLocation**
Specifies the installation destination directory. If you want the installation destination directory to be `C:/myconsole/itsanm/console`, enter the example as follows:

```bash
-W installLocation="C:/myconsole/itsanm/console"
```

*Note:* This procedure accepts forward or backward slashes for directory paths on a Windows platform.

**beanManagerLocation.HostName**
Specifies the fully qualified name of the remote manager machine. If you want the name to be `mydivision.mycompany.com`, specify the following example:

```bash
-W beanManagerLocation.HostName="mydivision.mycompany.com"
```

**beanManagerLocation.PortNo**
Specifies the primary port number of the remote manager machine. If you want to use 9800 as the port number, specify the following example:

```bash
-W beanManagerLocation.PortNo=9800
```

**portNoBean**
Specifies the port number for this console. If you want the port number to be 9830, specify the following example:

```bash
-W portNoBean.portNumber=9830
```

**comPassword**
Specifies a password for the manager, managed host, and remote console communication. If you want to use `hostcomm` as the password, specify the following example. This password must be the same password on the manager machine that this remote console communicates with.
How to install the remote console

To install the remote console using the `console.opt` file, run this command:

```
setup -silent -options <install_dir>\console.opt
```

Where `install_dir` is the directory where the options file is located.

Uninstalling IBM Tivoli Storage Area Network Manager

This section describes how to uninstall IBM Tivoli Storage Area Network Manager if you installed the product using silent installation.

Uninstalling the manager

To uninstall the manager on Windows, follow this step:

1. From the installation directory, run the following command:
   
   ```
c:\tivoli\itsanm\manager\uninst\uninstall -silent
   ```

   To uninstall the AIX manager, follow this step:

   1. From the installation directory, run this command:

      ```
      /tivoli/itsanm/manager/_uninst/uninstall -silent
      ```

Uninstalling the remote console

To uninstall the remote console, follow this step:

1. Run this command from the installation directory:

   ```
c:\tivoli\itsanm\console\uninst\uninstall -silent
   ```

Uninstalling the agents

To uninstall the Windows agent, follow this step:

1. From the installation directory, run this command:

   ```
c:\tivoli\itsanm\agent\uninst\uninstall -silent
   ```

   To uninstall the UNIX agent, follow this step:

   1. From the installation directory, run this command:

      ```
      /tivoli/itsanm/agent/_uninst/uninstall -silent
      ```
Appendix B. Migrating the Cloudscape database to the DB2 database

If you previously installed IBM Tivoli Storage Area Network Manager using the Cloudscape database and want to migrate Cloudscape to the DB2 database, follow this procedure.

Migrating the Cloudscape database to the DB2 database

To migrate your Cloudscape database to the DB2 database, rerun the manager installation program. Follow these steps:

1. You must have DB2 installed. For DB2 on Windows, see “Step 4: Install DB2” on page 22. For DB2 on AIX, see “Step 3: Install DB2” on page 54.

2. If you are installing on the Windows manager, you must log in with a DB2 administrator ID and password. If you are installing on the AIX manager, you must log in as the root user (with root authority).

3. For the Windows manager, ensure that the following applications are stopped:
   - Web Console
   - Web Console Security
   - MIB Loader
   - MIB Browser
   - Netmon Seed Editor
   - Tivoli Event Console Adaptor Configurator

   Also ensure that you do not have the Windows 2000 Terminal Services running.

4. Insert the Tivoli Storage Area Network Manager (Manager and Remote Console) CD into the CD-ROM drive. For Windows, if autorun is enabled, the installation program should start automatically. If it does not, open Windows Explorer and go to the IBM Tivoli Storage Area Network Manager CD-ROM drive. Double-click on launch.exe. The Launch panel is displayed. Select Manager. Click Next to continue. To see the panels, see “Installing the manager” on page 34.

5. For AIX, use these commands to create the directory, and determine the mount directory. The command also runs the install script. The install script is in the manager directory. Run these commands:

   makedir /cdrom
   mount -v 'cdrfs' -r' /dev/cd0 /cdrom
   cd /cdrom/manager
   ./setup.aix

   Note that the -r option is followed by two single quotation marks. To see the panels, see “Installing the manager” on page 34.

6. The Select a language panel is displayed. Select a language from the drop-down list and click OK. This is the language that is used for installing this product.

7. The Welcome panel is displayed. Click Next to continue.

8. The Directory Information panel is displayed. Enter a different directory name or accept the default directory name. The installation program creates the default directory if one does not already exist. Click Next to continue.
Note:

- Do not use spaces or hyphens in your directory names.
- If you are installing the AIX manager, the directory path will be different. For example, the directory path might be: /tivoli/itsanm/manager.

9. The Port Number panel is displayed. This is a range of eight port numbers for use by Tivoli Storage Area Network Manager. The first port number you specify is considered the primary port number. You only need to enter the primary port number. The primary port number and the next 7 numbers will be reserved for use by Tivoli Storage Area Network Manager. For example, if you specify port number 9550, Tivoli Storage Area Network Manager will use port numbers 9550–9557.

Ensure that the port numbers you use are not used by other applications.

Enter the primary port number and click Next to continue.

10. The Database Choice panel is displayed. Select DB2.

11. The DB2 Administrator User ID and Password panel is displayed. For information about this Windows DB2 administrator user ID, see Table 9 on page 32. Enter the DB2 administrator ID and enter the password twice. Make sure that your password has not expired. Click Next to continue.

Note:

- If you are installing the AIX manager, this user ID and password is for the DB2 instance owner (for example, db2inst1).
- If you selected Cloudsape as your database, this panel is not displayed.

12. The DB2 User ID and Password panel is displayed. For information about this user ID, see Table 9 on page 32. Enter a DB2 user ID and password twice. The default database name is itsanmdb. If this is not your database, enter the correct database name. Click Next to continue.

Note:

- If you are using an existing user ID and password, the installation program does not validate this password. Be sure that your user ID and password are valid. Also make sure that your password has not expired before continuing the installation program.
- If you are using the DB2 database, and elected to use the DB2 administrator user ID and password for the database, this panel is not displayed.

13. The User ID and Password for WebSphere panel is displayed. Enter the user ID and password twice.

Note:

- If you are using the DB2 database and elected to use the DB2 administrator user ID password for WebSphere, this panel is not displayed.

14. The Password for Host Authentication panel is displayed. You can enter any password you wish, but this same password must be used for all managed hosts and remote consoles that communicate with this manager. For information about this password, see Table 9 on page 32. Enter your password twice. Click Next to continue.

Note:
• If you are using the DB2 database and elected to use the DB2 administrator password for host authentication, this panel is not displayed.

• If you selected Cloudscape as your database and elected to use the WebSphere password for host authentication, this panel is not displayed.

15. The Tivoli NetView Drive Name panel is displayed. Enter the drive name where you want Tivoli NetView installed. Click Next to continue.

Note:
• If you have Tivoli NetView 7.1.3 installed, this panel is not displayed.
• If you are installing the AIX manager, this panel is not displayed.

16. The Tivoli NetView Password panel is displayed. For information about this user ID and password, see Table 9 on page 32. Enter the password twice. Click Next to continue.

Note:
• If you have Tivoli NetView 7.1.3 installed, this panel is not displayed.
• If you are installing the AIX manager, this panel is not displayed.
• If you selected DB2 as your database and elected to use the DB2 administrator password for NetView, this panel is not displayed.
• If you selected Cloudscape as your database and elected to use the WebSphere password for NetView, this panel is not displayed.

17. The Tivoli Storage Area Network Manager Install panel is displayed. Click Next to continue.

Note: If you are installing the AIX manager, the directory path is different. For example, the directory path might be: /tivoli/itsanm/manager.

18. The Status panel is displayed. This can take about 15-20 minutes to complete.

19. When the installation has completed, the Successfully Installed panel is displayed. Click Finish.

20. The Tivoli Storage Area Network Manager service is automatically started.
Appendix C. Migrating DB2 Version 7.2 to Version 8.1

IBM Tivoli Storage Area Network Manager is supported on DB2 version 8.1. However, the DB2 version shipped with IBM Tivoli Storage Area Network Manager is DB2 version 7.2 on the Tivoli Enterprise Data Warehouse CDs. For information on how to migrate DB2 version 7.2 to version 8.1, see the following Web site for Quick Beginnings for DB2 Servers:


See Chapter 4: Migration Considerations in IBM DB2 Universal Database Quick Beginnings for DB2 Servers.

You will note some differences in DB2 Version 7.2 and 8.1:

- The default path for DB2 Version 7.2 on Windows was \\Program Files\\SQLLIB. The default path for DB2 Version 8.1 is \\Program Files\\IBM\\SQLLIB.
- The installation panels are different for DB2 Version 7.2 and 8.1.

If you are migrating to DB2 Version 8.1, you should do the DB2 migration first before you install or upgrade IBM Tivoli Storage Area Network Manager.

Migration restrictions

You should be aware of the following restrictions before you migrate to DB2 Version 8.1:

- Issuing the migrate database command from a DB2 Version 8 client to migrate a database to a DB2 Version 8 server is supported. However, issuing the migration command from a DB2 Version 7 client to migrate a database to a DB2 Version 8 server is not supported.
- Migration between platforms is not supported. For example, you cannot migrate a database from a DB2 server on Windows to a DB2 server on UNIX.
- Migrating a partitioned database system that has multiple computers requires that database migration be performed after DB2 Version 8 is installed on all participating computers.
- Windows allows only one version of DB2 to be installed on a computer. For example, if you have DB2 Version 7 and install DB2 Version 8, DB2 Version 7 will be removed during the installation. All instances are migrated during DB2 installation on the Windows operating system.
- You cannot migrate a database that is in one of the following states:
  - Backup pending
  - Roll-forward pending
  - One or more table spaces not in a normal state
  - Transaction inconsistent
- Restoration of down-level database backups is supported, but the rolling forward of down-level logs is not supported.
- Database transactions executed between database backup time and the time DB2 Version 8 migration is completed are not recoverable.
Pre–installation procedure

Before migrating to DB2 Version 8, follow this procedure:

1. Perform hardware and operating system upgrades separately from DB2 migration (see "Chapter 4. Migration considerations, Migration recommendations" in Quick Beginnings for DB2 Servers)
2. Back up databases before DB2 migration (see "Chapter 4. Migration considerations, Backing up databases before DB2 migration" in Quick Beginnings for DB2 Servers)
3. Optional: If you will be using replication, you must archive all of the DB2 log files.
4. Ensure that you have sufficient table space for databases you are migrating (see "Chapter 4. Migration considerations, Space considerations for DB2 migration" in Quick Beginnings for DB2 Servers)
5. Record system configuration settings before DB2 migration (see "Chapter 4. Migration considerations, Recording system configuration settings before DB2 migration" in Quick Beginnings for DB2 Servers)
6. Change the diagnostic error level before DB2 migration (see "Chapter 4. Migration considerations, Changing the diagnostic error level before DB2 migration" in Quick Beginnings for DB2 Servers)
7. Verify that your databases are ready for migration (see "Chapter 4. Migration considerations, Verifying that your databases are ready for migration" in Quick Beginnings for DB2 Servers)
8. Take the DB2 Version 7 server offline for DB2 migration (see "Chapter 4. Migration considerations, Taking a V6 or V7 DB2 server offline for DB2 migration" in Quick Beginnings for DB2 Servers)

Migrating DB2 on the Windows manager

To migrate DB2, follow this procedure:

1. Stop the IBM Tivoli Storage Area Network Manager (manager service).
2. Make sure that you have completed the steps in "Pre–installation procedure."
3. Install your DB2 server:
   a. Workgroup Server Edition or DB2 Enterprise Server Edition (single partition)
   b. Enterprise Server Edition (partitioned)
4. Migrate the databases (see "Chapter 5. Migrating DB2 servers (Windows)" in Quick Beginnings for DB2 Servers).
5. Optional: Migrate DB2 Explain tables.
6. Install or upgrade IBM Tivoli Storage Area Network Manager on the manager and remote console.
7. You must copy the db2java.zip file from the DB2 directory on the manager machine to the remote console directory. You must copy it twice: once as a zip file and once as a jar file. For example, copy this file from the following default directory from the manager machine:
   c:\Program Files\IBM\SQLLIB\java

   Copy this file to the following directory:
   c:\<console_install_dir>\lib

   <console_install_dir> is where the remote console is installed. For example, you will have two copy commands:
Migrating DB2 on the AIX manager

To migrate DB2, follow this procedure:

1. Make sure that you have completed the steps in "Pre-installation procedure" on page 196.
2. Install your DB2 server:
   - Workgroup Server Edition or DB2 Enterprise Server Edition (single partition)
   - Enterprise Server Edition (partitioned)
3. Migrate the instances (see "Chapter 6. Migrating DB2 servers (UNIX), Migrating instances (UNIX)" in Quick Beginnings for DB2 Servers).
4. Optional: If you have created a DB2 tools catalog and want to use your existing pre-version 8 scripts and schedules (for the Control Center), you must migrate the DB2 Administration Server. (see "Chapter 6. Migrating DB2 servers (UNIX), Migrating the DB2 Administration Server (DAS)" in Quick Beginnings for DB2 Servers)
5. Migrate the databases (see "Chapter 6. Migrating DB2 servers (UNIX), Migrating databases" in Quick Beginnings for DB2 Servers)
6. Install or upgrade IBM Tivoli Storage Area Network Manager on the manager and remote console.
7. You must copy the db2java.zip file from the DB2 directory on the manager machine to the remote console directory. You must copy it twice: once as a zip file and once as a jar file. For the AIX manager, db2java.zip is found in the following default directory:
   /usr/lpp/db2_08_01/java/

   Copy db2java.zip twice from the manager machine to the remote console. Copy this file once as a zip file and then as a jar file to the following directory:
   c:\<console_install_dir>\lib

   <console_install_dir> is where the remote console is installed. For example:
   c:\tivoli\itsanm\console\lib

   In the remote console directory, you will have a db2java.zip file and a db2java.jar file.
Appendix D. Hints and tips

This section provides information about the following:

Table 16. Information about hints and tips for Tivoli Storage Area Network Manager

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Checking the IBM Tivoli Storage Area Network Manager release level

To check for the release level of IBM Tivoli Storage Area Network Manager, edit the version.txt file in the installation directory. For example, on Windows go to the following directories:

- `c:\tivoli\itsanm\manager` for the manager
- `c:\tivoli\itsanm\agent` for the managed host
- `c:\tivoli\itsanm\console` for the remote console

On UNIX, go to the following directories:

- `/tivoli/itsanm/manager` for the manager
- `/tivoli/itsanm/agent` for the managed host
- `/tivoli/itsanm/console` for the remote console
An example of the file is shown below:

ITSANM V1.2.1 Build SANM_1.2.1.08 20030522

Where V1.2.1 indicates the version, release, and modification level.

---

**Tips on running with DB2**

This section provides tips on running with DB2.

**How to check the DB2 level**

To check which level of DB2 you are running, follow the examples below.

For Windows, run this command:

db2level

An example of the output is shown below:

DB21085I Instance "DB2" uses DB2 code release "SQL07027" with level identifier "03080105" and informational tokens "DB2 v7.1.0.77", "n030303" and "WR21320".

For AIX, run this command:

db2level

An example of the output is shown below:

DB21085I Instance "DB2" uses DB2 code release "SQL07027" with level identifier "03080105" and informational tokens "DB2 v7.1.0.77", "s030303" and "U486937".

**How to reorganize DB2 tables**

The performance of SQL statements that use indexes can be impaired after many updates, deletions, or insertions of data into the database. Generally, newly inserted rows cannot be placed in a physical sequence that is the same as the logical sequence defined by the index (unless you use clustered indexes). This means that the Database Manager must perform additional read operations to access the data, because logically sequential data may be on different physical data pages that are not sequential. This in turn causes the performance to deteriorate.

Some data files in the DB2 database that IBM Tivoli Storage Area Network Manager uses can grow significantly larger than any other data files. To determine if you need to reorganize your DB2 tables, follow this procedure:

1. Get database configuration information (see "Get database configuration information"
2. Get a DB2 database report (see "Get a DB2 database report" on page 201)
3. Reclaim DB2 space and update statistics (see "Reclaim DB2 space and update statistics" on page 201)

**Get database configuration information**

To get database configuration information, follow this procedure:

1. Start the DB2 environment.
   - For Windows, enter the db2cmd command from a command prompt window. A new db2cmd window is displayed.
   - For AIX, from a shell prompt, run the db2profile of your DB2 instance owner. For example, if your DB2 instance owner ID is db2inst1, run this command: $ "~/db2inst1/sqllib/db2profile

2. Issue the following command. This example uses the default database name of itsanmdb. If you use a different database name, enter your database name.
db2 get db cfg for itsanmdb

3. A list of your database configuration is displayed. Look for the value “Path to log files”. The following example shows where the database files are located which is SQL000xx.

Path to log files =C:\DB2\NODE0000\SQL000xx\SQL0LDIR\n
4. Change the directory to C:\DB2\NODE0000\SQL000xx\ITSANM1. Look at the directory listing of the files. If you see some files which are significantly larger than the rest, then you should continue with the following procedures (see "Get a DB2 database report" and "Reclaim DB2 space and update statistics").

Get a DB2 database report
To get a DB2 report, follow this procedure:
1. From the db2cmd window, connect to the database using the following command:
   
   ```
   db2 connect to <database_name> user <db2_admin> using <db2_admin_password>
   ```
   
   For example, if your database name is itsanmdb, your DB2 administrator user ID is db2admin, and your DB2 administrator user password is db2adminpswd, this is the command to use:
   
   ```
   db2 connect to itsanmdb user db2admin using db2adminpswd
   ```
   
2. From the same db2cmd window, change the directory to <install_dir>\manager\apps\db2. <install_dir> is where IBM Tivoli Storage Area Network Manager is installed.
3. Issue the following `reorgchk` command. The `reorgchk` command calculates statistics on the database to determine if tables need to be reorganized.
   
   ```
   db2 -tvf reorgchk.sql
   ```
   
   Search for asterisks (*) in the REORG column of the report. This indicates that the table or index needs to be reorganized. For more information about how to read the output from the `reorgchk` command, see `reorgchk` command in IBM DB2 Universal Database Command Reference. For more information about reorganizing catalogs and tables, see “Reorganizing Catalogs and User Tables” in IBM DB2 Universal Database Administration Guide: Performance.

Reclaim DB2 space and update statistics
To reclaim DB2 space and update statistics, follow this procedure:
1. From the DB2 command window, issue the `reorg` command on the problem tables:
   
   ```
   db2 -tvf reorg.sql
   ```
   
   It may take time to reorganize large tables and indexes. Therefore, you should reorganize the tables when the system has low usage. You can edit the `reorg.sql` file and select only the problem tables. After the reorganization, the free space in fragmented data will be removed. The file size of the problem tables will be reduced. This can provide faster access to the data thereby improving performance.

   2. Issue the `runstats` command on the problem tables:
   
   ```
   db2 -tvf runstats.sql
   ```
   
   You should issue the `runstats` command after you issue the `reorg` command. This will update the statistics for the IBM Tivoli Storage Area Network Manager tables. You can edit the `runstats.sql` file and select the same set of
the problem tables. It may take time to collect the statistics for a large table. The statistics from the runstats command can provide better information for better performance.

**Configuring the DB2 database**

Your DB2 database will grow in size as information is collected by IBM Tivoli Storage Area Network Manager. To avoid running out of space, it is recommended that you follow the steps below to configure the DB2 database.

Follow these steps:

1. Stop the manager.
   To stop the manager on Windows, follow these steps:
   a. From the task bar, click on the following:
      
      Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services
   b. On the Services panel, find and highlight **IBM WebSphere Application Server V5 – ITSANM–Manager**.
   c. Right–click on **IBM WebSphere Application Server V5 – ITSANM–Manager**.
   d. Click Stop.

   To stop the manager on AIX, go to the working directory and run this command (using the default directory):

   `/tivoli/itsanm/manager/bin/aix/stopSANM.sh`

2. Start a DB2 environment.
   For Windows, enter **db2cmd** from a command prompt window. A new db2cmd window is displayed.

   For AIX, from a shell prompt, run the db2profile of your DB2 instance owner. For example, if your DB2 instance owner ID is db2inst1, run this command:

   `$ . ~/db2inst1/sqlib/db2profile`

3. Run the following commands. These examples use the default database name of itsanmdb. If your database name is different, use your database name.

   db2 update db cfg for itsanmdb using LOGFILSIZ 2500
   db2 update db cfg for itsanmdb using LOGPRIMARY 20
   db2 update db cfg for itsanmdb using LOGSECOND 4

   You must disable all of the connections associated with the database. Then, the next connection will start using the new database configuration.

4. Restart the manager.
   For Windows, follow these steps:
   a. From the task bar, click on the following:
      
      Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services
   b. On the Services panel, find and highlight **IBM WebSphere Application Server V5 – ITSANM–Manager**.
   c. Right–click on **IBM WebSphere Application Server V5 – ITSANM–Manager**.
   d. Click Start.

   For AIX, go to the working directory and run this command (using the default directory):

   `/tivoli/itsanm/manager/bin/aix/startSANM.sh`
Managing the transaction logs

The database that is used by the manager has the database recovery option turned on by default. This allows the recovery of the database in case of a system crash. By turning the recovery option on, DB2 will generate transaction logs and save them in a DB2 system directory. Over time, these logs will grow in size. The recommended way to free up the space is to use the DB2 userexit function as described in the DB2 Administration Guide. Another way to free up the file system space is to move the inactive logs to another file system. This method is described below. To move the inactive logs to another file system, follow the steps below.

Follow these steps:

1. Start a DB2 environment.
   For Windows, open a command prompt window. Enter `db2cmd`
   For AIX, from a shell prompt, run the db2profile of your DB2 instance owner. If your DB2 instance owner is db2inst1, enter the following:
   ```
   $ ."/db2inst1/sqlib/db2profile
   ```
2. Issue the following command. This example uses the default database name of itsanmdb. If you use a different database name, use your database name.
   ```
   db2 get db cfg for itsanmdb
   ```
3. A list is displayed of your database configuration. Look for the values "Path to log files" and First active log file. The Path to log files is where the log files are located. The First active log file indicates the current active log. The following example shows this output.
   ```
   Path to log files    = C:\DB2\NODE0000\SQL000nn\SQLLOGDIR\n   First active log file = S00000014.LOG
   ```
   For AIX, the path will be: `DB2/NODE0000/SQL000nn/SQLLOGDIR/`. You can move the files, `S0000001.LOG` to `S00000013.LOG`, to another file system or back up and remove the log files to free up the log space. (Do not move the active log file.)

This method is provided to you as a quick way to manage your transaction logs. However, the recommended way to free up space is to use the DB2 userexit command.

Using DB2 on Windows

This section provides some hints and tips when using DB2 on Windows.

Checking for DB2

To see if DB2 is up and running, follow these steps:

1. Click on the following:
   ```
   Start ➔ Programs ➔ DB2 for Windows NT ➔ Control Center
   ```
2. You will get a log in dialog window. Enter your DB2 administrator ID and password and click OK.
3. You will see your DB2 Control Center window with the host name where the DB2 database is installed.
4. Once you install IBM Tivoli Storage Area Network Manager, you will be able to verify that your DB2 databases are created as shown in Figure 165 on page 204.

Appendix D. Hints and tips 203
Stopping and restarting a DB2 server
To open a DB2 command window, click:
Start ➔ Programs ➔ DB2 for Windows NT ➔ Command Window

To stop DB2, enter the `db2stop` command from the DB2 Command window. Before you can issue the command, you must first stop these services from the Windows Services panel:
- DB2 Security Server (this will prompt you to stop the Warehouse logger and Warehouse Server, click Yes)
- DB2 License Server
- DB2 JDBC Applet Server
- DB2 - DB2DAS00
- DB2 - DB2CTLSV
- DB2 - DB2

You can then issue the `db2stop` command.

To restart DB2, enter the `db2start` command from the DB2 Command window. Before you can issue the command, you must first start these services from the Windows Services panel:
- DB2 - DB2
- DB2 - DB2CTLSV
- DB2 - DB2DAS00
- DB2 JDBC Applet Server
- DB2 License Server
- DB2 Security Server

You can then issue the `db2start` command.

Dropping a DB2 database
To drop a DB2 database (`itsanmdb`), follow these steps:
1. Open a DB2 command window.
2. Enter this command:
   ```
   db2 connect to itsanmdb user db2admin using <password>
   ```
This connects to the database named itsanmdb with a user ID of db2admin.

The output is shown as follows:

Database Connection Information

<table>
<thead>
<tr>
<th>Database server</th>
<th>= DB2/NT 7.2.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL authorization ID</td>
<td>= RCHIANG</td>
</tr>
<tr>
<td>Local database alias</td>
<td>= ITSANMDB</td>
</tr>
</tbody>
</table>

3. Issue this command to list the DB2 applications:

db2 list application

You will see this output:

<table>
<thead>
<tr>
<th>Auth Id</th>
<th>Application Name</th>
<th>Appl. Handle</th>
<th>Application ID</th>
<th>DB Name</th>
<th># of Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCHIANG</td>
<td>db2bp.exe</td>
<td>11</td>
<td>*LOCAL.DB2.031024215710</td>
<td>SAMPLE</td>
<td>1</td>
</tr>
<tr>
<td>RCHIANG</td>
<td>db2bp.exe</td>
<td>10</td>
<td>*LOCAL.DB2.031024215537</td>
<td>ITSANMDB</td>
<td>1</td>
</tr>
</tbody>
</table>

4. Issue this command to stop the application:

db2 force application (10)

5. You can then drop the DB2 database with this command:

db2 drop database itsanmdb

**Using DB2 on AIX**

This section provides some hints and tips when using DB2 on AIX.

To check if DB2 is running, run this command:

```
ps -ef | grep -i db2
```

This command displays the processes that are running.

**Archiving database logs**

If you are running out of space for your database logs, you can develop a user exit program to automate log file archiving and retrieval. You can check the user exit for DB2 to make sure it is set up properly. IBM Tivoli Storage Area Network Manager defaults the DB2 database logs to use circular logs (logretain=no). The database logs will be archived periodically to a pre-designated location. The user exit sample programs are in SQLLIB\samples\db2uest2.* for Windows. For AIX, the user exit sample programs are in the sqlib/samples/c subdirectory. You can modify the file space name, database name, prefix log name, and the suffix log name. In addition, you can customize the user exit to invoke the IBM Tivoli Storage Manager APIs to perform a backup and to restore the database logs. For more information about the user exits, see *IBM DB2 Universal Database Data Recovery and High Availability Guide and Reference*. For information about how to set the parameters in the user exit program, see *IBM DB2 Universal Database Administration Guide: Performance*.

**Checking DB2 performance**

If you want to check and tune your DB2 performance, you can use the DB2 Performance Configuration wizard. To use the wizard, follow this procedure:

1. From the DB2 command prompt window, issue **db2cc**.
2. The DB2 Control Center window is displayed.
3. Go to the DB2 instance for your database (for example, itsanmdb).
4. Right-click on the DB2 instance. Select **Configure Performance Using Wizard**.
5. The Introduction panel is displayed that allows you to confirm the name of your database. Click **Next**.
6. The Server panel is displayed that allows you to adjust the server’s memory that you want the database to use. Use the slide bar to adjust the target memory. Click **Next**.
7. The Workload panel is displayed to allow you to select the type of workload for your database. Select **Mixed**. Click **Next**.
8. The Transactions panel is displayed so you can specify a typical database transaction. You can specify the average number of SQL statements per unit of work and the transactions per minute. Make your selections and click **Next**.
9. The Priority panel is displayed so you can specify a database administration priority. Select **Both** and click **Next**.
10. The Populated panel is displayed to allow you to specify whether the database is populated with data. Select **Yes** and click **Next**.
11. The Connections panel is displayed to allow you to estimate the number of applications connected to this database. You can specify the average number of connected local applications (100) and the average number of connected remote applications (20). Make your selections and click **Next**.
12. The Isolation panel is displayed to allow you to select the type of row locking you want. Select **Cursor stability** and click **Next**.
13. The Results panel is displayed to allow you to review the performance configuration recommendations. The information provides current values and suggested values for the parameters below:

    - Catalog cache size
    - Changed pages threshold
    - Database heap size
    - Default degree
    - Default prefetch size
    - Maximum storage for lock list
    - Log buffer size
    - Log file size
    - Number of primary log files
    - Number of secondary log files
    - Maximum number of active applications
    - Maximum locks per application
    - Group commit count
    - Number of asynchronous page cleaners

You can apply these recommendations immediately or save these recommendations in a script. Select a choice and click **Finish**.

For more information about DB2 performance, see *IBM DB2 Universal Database Administration Guide: Performance*.

---

**Checking for a fully qualified host name**

IBM Tivoli Storage Area Network Manager requires fully qualified host names. Some machines might be configured to return a short host name, such as `ddunham` instead of a fully qualified host name, such as `ddunham.myorg.mycompany.com`. 
Windows 2000 systems

To verify that a primary domain name system (DNS) suffix is set, follow these steps:
1. On the desktop, right-click My Computer.
2. Click Properties.
3. Click the Network Identification tab.
4. Ensure that the field Full Computer Name contains a fully qualified domain name. If it does not, follow these steps:
   a. Click Properties on the Network Identification tab.
   b. On the Identification Changes window, click More.
   c. In the field Primary DNS suffix of this, type the primary DNS suffix, and restart the computer when prompted.

Windows NT systems

To verify that a primary domain name system (DNS) suffix is set, follow these steps:
1. From the Windows task bar, click Start ➔ Settings ➔ Control Panel.
2. In the Control Panel window, double-click Network.
3. Click the Protocols tab.
4. Select the TCP/IP protocol and then click Properties.
5. Click the DNS tab.
6. Ensure that the field Domain contains a domain suffix. If it does not, type the suffix, click OK, then restart the computer when prompted.

AIX systems

The default domain name search order is as follows:
1. Domain Name System (DNS) server
2. Network Information Service (NIS)
3. Local /etc/hosts file

If the /etc/resolv.conf file does not exist, the /etc/hosts file is used. If only the /etc/hosts file is used, the fully qualified computer name must be the first one that is listed after the IP address.

Verify that the /etc/resolv.conf file exists and contains the appropriate information, such as:
   domain mydivision.mycompany.com
   nameserver 123.123.123.123

If NIS is installed, the /etc/irs.conf file overrides the system default. It contains the following information:
   hosts = bind,local

The /etc/netsvc.conf file, if it exists, overrides the /etc/irs.conf file and the system default. It contains the following information:
   hosts = bind,local

If the NSORDER environment variable is set, it overrides all of the preceding files. It contains the following information:
   export NSORDER=bind,local
Solaris systems

Verify that the /etc/resolv.conf file exists and contains the appropriate information, such as:

- domain mydivision.mycompany.com
- nameserver 123.123.123.123

A short name is used if the /etc/nsswitch.conf file contains a line that begins as follows and if the /etc/hosts file contains the short name for the computer:

hosts: files

To correct this problem, follow these steps:
1. Change the line in the /etc/nsswitch.conf file to the following:
   hosts: dns nis files
2. Enter the following command to stop the inet service:
   /etc/init.d/inetd stop
3. Enter the following command to restart the inet service:
   /etc/init.d/inetd start

Linux systems

Run this command to display the fully qualified host name of the computer:

more /etc/hosts

An example of the output is displayed:

123.123.123.123 mydivision.mycompany.com short_name

The IP address is displayed followed by the fully qualified host name and the short name.

Changing the HOSTS file

When you install Service Pack 3 for Windows 2000 on your computers, you must follow these steps to avoid addressing problems with Tivoli Storage Area Network Manager. The problem is caused by the address resolution protocol which returns the short name (not fully qualified host name). This problem can be avoided by changing the entries in the corresponding host tables on the DNS server and on the local computer. The fully qualified host name must be listed before the short name.

To correct this problem, follow these steps:
1. You will find the HOSTS file in the %SystemRoot%\system32\drivers\etc\ directory.
2. You will have to edit the HOSTS file. An example of a HOSTS file is shown below.

   # Copyright (c) 1993-1995 Microsoft Corp.
   #
   # This is a sample HOSTS file used by Microsoft TCP/IP for Windows NT.
   #
   # This file contains the mappings of IP addresses to host names. Each entry should be kept on an individual line. The IP address should be placed in the first column followed by the corresponding host name.
   # The IP address and the host name should be separated by at least one space.
   #
   # Additionally, comments (such as these) may be inserted on individual lines or following the machine name denoted by a '#' symbol.
For example:

```
# For example:
# 102.54.94.97  rhino.acme.com  # source server
# 38.25.63.10    x.acme.com     # x client host
```

```
192.168.123.146  jason   jason.groupa.mycompany.com
```

3. Enter the fully qualified host name as the first line to be searched in the table. (Lines preceded with a # sign are comment lines.) For example, add the line in bold highlight to the file:

```
# For example:
# 192.168.123.146  jason.groupa.mycompany.com  jason
```

Note: Host names are case-sensitive. This is a WebSphere limitation. Check your host name. See “Step 2: Verify your computer name” on page 21. For example, if your computer shows the name as JASON (upper case), then you must enter JASON in the HOSTS file.

**Checking for a static IP address**

The IBM Tivoli Storage Area Network Manager (manager component) must have a static IP address. The remote DNS server must know the static IP address of each machine.

For Windows 2000: To find the static IP address, perform the following steps:
2. Select Properties.
3. Right–click on LAN connection.
4. Select Properties.
5. Select Internet Protocol (TCP/IP).
6. Click Properties.
7. The Internet Protocol (TCP/IP) Properties window is displayed.
If Use the following IP address is selected, you have a static IP address.

**Changing the SNMP community name**

The SNMP community name has a default value of PUBLIC.

**Note:** IBM Tivoli Storage Area Network Manager only supports one SNMP community name. A switch can have several community names, but IBM Tivoli Storage Area Network Manager can only communicate with one of those names. Also, if the SNMP community name entered in the command is not a community name on the switch, IBM Tivoli Storage Area Network Manager SNMP queries will time out. IBM Tivoli Storage Area Network Manager will not be able to communicate with the switch.

If you want to change the community name, follow these steps:

1. Open a command prompt window on the manager machine.
2. Change to the following directory:
   
   tsmn\manager\bin\w32-ix86

3. Enter the following commands:
   
   setenv
   
   smcp -u user_ID -p password ConfigService set SnmpCommunityName name

   Where:
   
   - `user_ID` is the user ID
   - `password` is the password for the user
   - `name` is the community name
Changing the manager the remote console communicates with

If you want to change the manager the remote console communicates with, follow these steps. For example, you might have the remote console communicating with a Windows manager and want to change the manager to the AIX manager. This example assumes that the host authentication password is the same for the manager and remote console.

Note: Make sure that the user ID and passwords are the same on the new manager machine. Otherwise, you will have to reinstall the remote console and specify the new manager machine’s user ID and password.

1. If you have installed DB2 Fixpak 10a, and have not copied the db2java.zip file from the manager machine to the remote console, do so now. See Step 19 on page 100.
2. If the host authentication password is not the same for the manager and remote console, you can change the authentication password using the smcp ConfigService setSinglePw command. For information about this command, see IBM Tivoli Storage Area Network Manager User’s Guide. Make sure the ITSANM–Console is running before making this change.
3. Stop the remote console on the console machine. From the task bar, click the following:
   Start ➔ Settings ➔ Control Panel ➔ Administrative Tools ➔ Services
4. On the Services panel, find and highlight ITSANM–Console.
5. Right–click on ITSANM–Console.
6. Click Stop.
7. Close the Tivoli NetView console.
8. Go to the directory where IBM Tivoli Storage Area Network Manager is installed. Edit the setup.properties file. For example, edit the following file:
   c:/tivoli/itsanm/console/conf/setup.properties

Change the manager.loc parameter to point to the new manager address. For example, change the following:

manager.loc=oldmanager.mydivision.mycompany.com

to

manager.loc=newmanager.mydivision.mycompany.com

Save the file.
9. If the manager port number is different, you can also change it in the setup.properties file. To change the manager port number, change the manager.port parameter to specify the new manager port number. Save the file.
10. Go to the Services panel and start the remote console.

Changing the virtual memory size on Windows

To change the virtual memory size on Windows, follow this procedure:

1. Right–click on My Computer.
2. Then click on Properties ➔ Advanced tab.
3. Click on Performance Options.
4. On the Performance Options panel, under "Virtual memory", click Change.
5. On the Virtual Memory panel, enter a value of 1024 or greater for the Initial size field.
6. Click Set.

7. Close the Performance Options and System Properties panels.

---

**Tips on running with Tivoli NetView**

This section describes how to launch an application from the IBM Tivoli Storage Area Network Manager Console.

**How to launch an application from the remote console**

Devices that launch their own management applications rather than using a Web or telnet interface must have the PATH environment variable set. The PATH variable must be set to the location of the application. If you do not set the PATH variable, you will get an application not found error when trying to launch the management application for the device.

To set the PATH variable, follow these steps:

1. Right-click on **My Computer** on your desktop.
2. Select **Properties**.
3. Select the **Advanced** tab → **Environment Variables**.
4. Under **System Variables**, select **PATH**.
5. Edit the **PATH** variable to include the location of the application.

---

**Setting up the NetView Web console**

IBM Tivoli Storage Area Network Manager supports the NetView Web console in a limited capacity. You can view changes in the SAN topology and state changes from any Web browser that has Java installed. However, you will not be able to see the following:

- IBM Tivoli Storage Area Network Manager menu items.
- IBM Tivoli Storage Area Network Manager view for the submap explorer (therefore you will not be able to see the properties for a device).
- The license exceeded message which might display for the IBM Tivoli Storage Area Network Manager Bonus Pack.

There are some limitations to using the NetView Web console:

- You must run with Java 1.3.1 installed (Java 1.4 will not work).
- Manually entered icons and labels in NetView are not dynamically updated on the Web console. The only way to see these is to close and open the main NetView application and open a new Web console.

To set up the NetView Web console, you have to go into the NetView Web Console security function and set up a console user with the appropriate privileges. Users must be defined before they can log on to the Web Console. The following information defines a user:

- User ID
- Password
- Role
- Scope

To set up a new user, do the following:

1. Open the Tivoli NetView console on your desktop.
2. Select:
Options ➔ Web Console Security

3. A dialog is displayed to allow you to add a new user and password. Select Users on the left side of the panel.

4. On the menu bar, click Selected ➔ Add.

5. Enter a user name in the Name field and a password in the Password field. Enter the same password again in the Confirm Password field.

6. Select the role (Select as Administrator).

7. Click OK.

For more information on the roles, security, and how to add new users, see the NetView Web Console User’s Guide which is located on any machine that has NetView installed. The guide is located in the usr\ov\books\c\pdf directory. The file name for the guide is nv_web_user_guide.pdf.

How to start the Web console

For information on starting the Web console, see Table 17.

<table>
<thead>
<tr>
<th>Starting point</th>
<th>Start method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager or remote console</td>
<td>Click: Start ➔ Programs ➔ Tivoli NetView ➔ NetView Web Console</td>
</tr>
<tr>
<td>Browser (any machine)</td>
<td>Enter: http://&lt;hostname&gt;:8080/netview/NetViewApplet</td>
</tr>
<tr>
<td>Windows command line</td>
<td>Enter: \usr\ov\bin\nvwc.bat</td>
</tr>
</tbody>
</table>

Where hostname is the name of the machine which has NetView installed. The port number of 8080 is the default port number that NetView and IBM Tivoli Storage Area Network Manager is installed with. If you change the port number, then the URL should be changed accordingly.

Logging onto the Web console

Use the following procedure to log onto the Web console:

1. Enter your user ID and password.

2. Enter the host name of the Web server that you want to connect to.

3. Enter the port number of the Web server that you want to connect to. The default is 8080.

4. Click OK.

Creating a user ID within a user group for security

You might want to restrict the user IDs that can issue IBM Tivoli Storage Area Network Manager commands on the manager. You can do this by creating a user group and a user ID within that group.

After you install IBM Tivoli Storage Area Network Manager, the next step in securing the distributed system is to create a user group on the Windows manager. Once you create the user group, you can add or create user IDs to add to the user group. A user is a person who will use IBM Tivoli Storage Area Network Manager to perform tasks. Once the user has access to the system, the tasks the user can perform will be determined by the roles the user is assigned within the user group.
The user group can be named anything you wish. For our example, we will use the name of srmAdmin. The user group name is case-sensitive.

On the manager computer, to create a user ID, do the following:
1. Right-click My Computer and click Manage. This will launch the Computer Management window. From here, click Local Users and Groups and then click Users.
2. From the menu bar, click Action and then click New User.
3. The New User dialog box is displayed. Enter the user name and password and then confirm the password. Uncheck User must change password at next logon, and check Password never expires (unless your enterprise has a policy to change passwords frequently). Click Create, then click Close. For example, enter a user ID of usradmin for the administrator.

![New User dialog](image)

Figure 167. New User dialog

4. Repeat the 3 steps above for each user ID you want to create. For example you can create a user ID of user2 for the user.

To create a user group, do the following:
1. Right-click My Computer and click Manage. This will launch the Computer Management window. From here, click Local Users and Groups and then click Groups.
2. From the menu bar, click Action and then click New Group.
3. The New Group dialog is displayed. Enter the group name and description. For our example, we will use the user group name of srmAdmin. This user group name is case-sensitive.
4. In the New Group dialog under Members, add the new user IDs you created (for example, usradmin to the srmAdmin group). Click Add to add the new user IDs. Then click Close.

5. Go to the manager’s installation directory:
   
   <install_dir>\apps\was\bin
   
   Where <install_dir> is where IBM Tivoli Storage Area Network Manager is installed.

6. Enter the following commands. Each command should be entered on one line. The commands are separated here because of limited printing space.

   wsadmin.bat
   $AdminApp edit itsanm {-MapRolesToUsers {{ "itsrmAdmin" no no "" "srmAdmin"}}}
   $AdminApp edit itsanm {-MapRolesToUsers {{ "itsrmAllAuthenticated" no no "" "srmAdmin"}}}
   $AdminConfig save
   exit
   stopserver server1
   startserver server1

   If you renamed the user group to a name other than srmAdmin, change the group name to your selected name (in two places).

7. At this point, only the users in the srmAdmin group can issue srmcp commands.

Additional information

This section provides additional information about how IBM Tivoli Storage Area Network Manager operates.
How Tivoli Storage Area Network Manager uses in–band events and out–of–band SNMP traps

Tivoli Storage Area Network Manager uses in-band events and out-of-band SNMP traps to start a discovery operation on the SAN.

In-band events and SNMP traps provide the same information, such as a change that has occurred in the SAN by indicating that a discovery operation should be performed. The in-band events and SNMP traps lets Tivoli Storage Area Network Manager know when something has happened in the SAN and then a discovery is done to identify the changes. The Tivoli Storage Area Network Manager agents that are running on the managed hosts detect in-band events. The Tivoli Storage Area Network Manager out-of-band change agent detects the SNMP traps. For Tivoli Storage Area Network Manager to receive the SNMP traps, configure the device, such as a switch, to send traps to Tivoli Storage Area Network Manager (management server).

Tivoli Storage Area Network Manager discovers SAN information by performing the following operations:

- Communicates with Tivoli Storage Area Network Manager agents. The agents run on the managed hosts (in-band discovery).
- Sends Management Information Base (MIB) queries directly to switches and other devices (out-of-band discovery).

Host and device information is gathered by the in-band operation. Topology information is gathered by using either or both the in-band and out-of-band discovery operations. Both topology discovery operations provide the same level of information; however, zone information is available only through the in-band discovery operation. Using both in-band and out-of-band discovery operations extends the range of devices that Tivoli Storage Area Network Manager supports. Some switches support only the in-band mechanism and some support only the out-of-band mechanism.

If there are no agents running on the host systems, out-of-band discovery operations and SNMP trap monitoring can be used to monitor the SAN. In this configuration, the Tivoli Storage Area Network Manager console can indicate switch and connection level information only. The devices and hosts will appear as unknown entities. You can change the icon and labels of the unknown entities to something more appropriate for your enterprise. If you want to use Tivoli Storage Area Network Manager in this way, configure Tivoli Storage Area Network Manager to receive SNMP traps. The SNMP traps determine when to start a rediscovery operation. Consider this configuration if you have the following conditions:

- You want to include unsupported systems on your SAN
- You want to monitor machines that you do not directly control.

The SNMP traps that are sent by the devices and by Tivoli Storage Area Network Manager can be sent to the Tivoli Storage Area Network Manager Console. The events can be displayed in the event browser, or they can be sent to another trap console for monitoring. You then can provide error recovery or other advanced processing, such as paging.

The following table shows the type of information that is gathered for in–band and out–of–band discovery operations. The topology and attribute scanners are both run when possible. For example, if an in–band scan is performed, both topology...
and attribute information is gathered if possible. The table also shows what information is gathered if only a topology or an attribute scan is performed.

### Table 18. Information gathered by Tivoli Storage Area Network Manager

<table>
<thead>
<tr>
<th>Type of information</th>
<th>In–band scan only</th>
<th>Out–of–band scan only</th>
<th>Both in–band and out–of–band scans</th>
</tr>
</thead>
</table>
| Topology            | • Switches and connections  
                      • Zone information  
                      • Hosts and devices appear as unknown entities | • Switches and connections  
                      • Zone information  
                      • Hosts and devices appear as unknown entities | • Switches and connections  
                      • Zone information  
                      • Hosts and devices appear as unknown entities |
| Attribute           | • Identify hosts  
                      • Identify endpoint devices  
                      • Device-centric and host-centric information | • — | • Identify hosts  
                      • Identify endpoint devices  
                      • Device-centric and host-centric information |
| Both topology and attribute | • Switches and connections  
                      • Zone information  
                      • Identify hosts  
                      • Identify endpoint devices  
                      • Device-centric and host-centric information | • Switches and connections  
                      • Hosts and devices appear as unknown entities | • Switches and connections  
                      • Zone information  
                      • Identify hosts  
                      • Identify endpoint devices  
                      • Device-centric and host-centric information |

### Information collected using vendor HBAs and switches

The table below shows information collected using vendor HBAs and switches. This assumes that the vendor switches support out–of–band discovery. Request Node Identification Data (RNID) is a Fibre Channel Extended Link Service (ELS) specified in the Fibre Channel Framing and Signaling (FC-FS) standard. The RNID ELS allows a port to send requests to other ports to gather information. Information is gathered such as type (HBA, switch, storage device, and so forth) using the Fibre Channel protocol.

<table>
<thead>
<tr>
<th>Level of information collected</th>
<th>Level of vendor HBA device driver support</th>
<th>What information can be gathered and shown</th>
</tr>
</thead>
</table>
| Good                          | Not using common API                      | Tivoli Storage Area Network Manager can do out–of–band management in this situation. Also, if other in–band agents have better or best levels of HBAs, then Tivoli Storage Area Network Manager can do in–band discovery through those agents. Information shown:  
  • Switches with IP connections to the manager.  
  • Topology that can be seen from the switches with IP connections to the manager.  
  • Hosts and other devices shown as unknown entities in the topology view. |
Table 19. Information gathered by Tivoli Storage Area Network Manager using vendor HBAs and switches (continued)

<table>
<thead>
<tr>
<th>Level of information collected</th>
<th>Level of vendor HBA device driver support</th>
<th>What information can be gathered and shown</th>
</tr>
</thead>
</table>
| Better                        | Use common API without RNID support      | Tivoli Storage Area Network Manager can do both out-of-band and in-band management in this situation. Other in-band agents will not be able to obtain RNID information from this HBA. In addition to the good level of information, you will see:  
  • Managed hosts with agents installed (not shown as unknown entities in the topology view).  
  • Some storage devices will no longer be shown as unknown entities in the topology view. |
| Best                          | Common API with RNID support             | Out-of-band, in-band, and RNID information are fully supported. In addition to the good and better level of information, you will see:  
  • All managed hosts that have HBAs that respond to RNID. Even if the agent is not installed, these hosts will not be shown as unknown entities in the topology view.  
  • Storage devices that respond to RNID will also no longer be shown as unknown entities in the topology view. |

Enabling the FC management MIB

When you have a switch like the Brocade 2400 or 2800, you must enable the FC management MIB on the switch. To enable the switch, follow these steps:

1. Telnet to the switch.
2. Log in.
3. At the prompt, enter `snmpmibcapset`.
4. Make sure that the FC management MIB is marked as `yes` for being enabled. If not, type `yes` and continue.
5. The switch does not need to be rebooted at this point.

Event classes and attributes for the Tivoli Enterprise Console

The event classes and attributes for the Tivoli Enterprise Console are shown in Table 20 on page 219.
<table>
<thead>
<tr>
<th>Event class</th>
<th>Event class attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANManagerEvent – this class inherits its attributes from the base EVENT class and consequently includes the attributes shown. All of the remaining classes in this table inherit the attributes from this class and therefore will contain these attributes in addition to the attributes that are unique to each specific event class.</td>
<td>EventClass</td>
</tr>
<tr>
<td></td>
<td>HostName</td>
</tr>
<tr>
<td></td>
<td>Origin</td>
</tr>
<tr>
<td></td>
<td>Source</td>
</tr>
<tr>
<td></td>
<td>Sub-Source</td>
</tr>
<tr>
<td></td>
<td>Message</td>
</tr>
<tr>
<td></td>
<td>MessageID</td>
</tr>
<tr>
<td></td>
<td>Severity</td>
</tr>
<tr>
<td>PhysicalEntityEvent – an event that indicates a change has occurred concerning a physical device. Note: PhysicalEntityEvents are derived from EntityEvents, which in turn are derived from SANManagerEvents. The attributes listed are EntityEvent attributes.</td>
<td>UniqueId</td>
</tr>
<tr>
<td></td>
<td>EntityType</td>
</tr>
<tr>
<td></td>
<td>Label</td>
</tr>
<tr>
<td></td>
<td>Type</td>
</tr>
<tr>
<td></td>
<td>HighLevelDevice</td>
</tr>
<tr>
<td></td>
<td>State</td>
</tr>
<tr>
<td></td>
<td>EventType</td>
</tr>
</tbody>
</table>
### Event classes and attributes for the Tivoli Enterprise Console (continued)

<table>
<thead>
<tr>
<th>Event class</th>
<th>Event class attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhysicalRelationshipEvent — an event that indicates that a change has occurred concerning a relationship between two physical entities. The entities are referred to as the &quot;ToObject&quot; and the &quot;FromObject&quot;. Note: PhysicalRelationshipEvents are derived from RelationshipEvents, which in turn are derived from SANManagerEvents. The attributes listed are RelationshipEvents.</td>
<td></td>
</tr>
<tr>
<td>UniqId</td>
<td>UniqId identifies the row in the database table that contains information concerning the entity for which we received this event.</td>
</tr>
<tr>
<td>EntityType</td>
<td>This identifies the database table that contains information about the relationship entity that this event was for.</td>
</tr>
<tr>
<td>ToObjectUniqueId</td>
<td>ToObjectUniqueId uniques the row in the database table that contains information concerning the &quot;ToObject&quot; for this relationship event.</td>
</tr>
<tr>
<td>ToObjectLabel</td>
<td>This is the manually entered name, discovered name, or WWN of the &quot;ToObject&quot;.</td>
</tr>
<tr>
<td>ToObjectType</td>
<td>This identifies the database table that contains information about the &quot;ToObject&quot; for this relationship event.</td>
</tr>
<tr>
<td>ToHighLevelDevice</td>
<td>This identifies the device that contains the &quot;ToObject&quot;. For example, in a relationship event for a PortToPort entity, this would identify the device that the &quot;to port&quot; is in: for example, switch6a.</td>
</tr>
<tr>
<td>FromObjectUniqueId</td>
<td>FromObjectUniqueId uniquely identifies the row in the database table that contains information concerning the &quot;ToObject&quot; for this relationship event.</td>
</tr>
<tr>
<td>FromObjectLabel</td>
<td>This is the manually entered name, discovered name, or WWN of the &quot;ToObject&quot;.</td>
</tr>
<tr>
<td>FromObjectType</td>
<td>This identifies the database table that contains information about the &quot;ToObject&quot; for this relationship event.</td>
</tr>
<tr>
<td>FromHighLevelDevice</td>
<td>This identifies the device that contains the &quot;FromObject&quot;.</td>
</tr>
<tr>
<td>State</td>
<td>This value is retrieved from the database and reflects the state of the relationship entity for which the event was sent. It will have a value of &quot;missing&quot; or &quot;normal&quot;.</td>
</tr>
<tr>
<td>EventType</td>
<td>This indicates the reason that the event was sent. Example values are: &quot;new device event&quot;, &quot;missing device event&quot;, &quot;modified attribute event&quot;.</td>
</tr>
</tbody>
</table>
Table 20. Event classes and attributes for the Tivoli Enterprise Console (continued)

<table>
<thead>
<tr>
<th>Event class</th>
<th>Event class attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogicalEntityEvent – an event that indicates that a change has occurred concerning a logical entity. <strong>Note:</strong> LogicalEntityEvents are derived from EntityEvents, which in turn are derived from SANManagerEvents. The attributes listed are EntityEvent attributes.</td>
<td></td>
</tr>
<tr>
<td><strong>UniqueId</strong></td>
<td>Uniquely identifies a row in a database column.</td>
</tr>
<tr>
<td><strong>EntityType</strong></td>
<td>This identifies the database table column that contains information about the entity that this event was for.</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>This is the name manually entered on the console for this particular entity. If no manually entered name is available, then the name reported by the discover agent is used. If neither of these are available, then the WWN is used.</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>This is the type value returned by the discover agents.</td>
</tr>
<tr>
<td><strong>HighLevelDevice</strong></td>
<td>This identifies the device that the logical entity is contained in. For example, the HLD for a port could be the switch and physical port number for the port.</td>
</tr>
<tr>
<td><strong>State</strong></td>
<td>This value is retrieved from the database and reflects the state of the entity for which the event was sent. It will have a value of “missing” or “normal”.</td>
</tr>
<tr>
<td><strong>EventType</strong></td>
<td>This indicates the reason that the event was sent. Example values are: “new device event”, “missing device event”, or “modified attribute event”.</td>
</tr>
<tr>
<td>Event class</td>
<td>Event class attributes</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
</tr>
</tbody>
</table>
| LogicalRelationshipEvent – An event that indicates that a change has occurred concerning a relationship between a logical entity and another logical entity or a physical entity. The entities are referred to as the "ToObject" and the "FromObject". Note: LogicalRelationshipEvents are derived from RelationshipEvents, which in turn are derived from SANManagerEvents. The attributes listed are RelationshipEvents. | **UniqueId**<br>Uniquely identifies the row in the database table that contains information concerning the entity for which we received this event.  
**EntityType**<br>This identifies the database table that contains information about the relationship entity that this event was for.  
**ToObjectUniqueId**<br>Uniquely identifies the row in the database table that contains information concerning the "ToObject" for this relationship event.  
**ToObjectLabel**<br>This is the manually entered name, discovered name, or WWN of the “ToObject”.  
**ToObjectType**<br>This identifies the database table that contains information about the "ToObject" for this relationship event.  
**ToHighLevelDevice**<br>This identifies the device that contains the "ToObject". For example, in a relationship event for a PortToPort entity, this would identify the device that the "to port" is in, for example, switch6a.  
**FromObjectUniqueId**<br>Uniquely identifies the row in the database table that contains information concerning the "ToObject" for this relationship event.  
**FromObjectLabel**<br>This is the manually entered name, discovered name, or WWN of the “ToObject”.  
**FromObjectType**<br>This identifies the database table that contains information about the "ToObject" for this relationship event.  
**FromHighLevelDevice**<br>This identifies the device that contains the "FromObject".  
**State**<br>This value is retrieved from the database and reflects the state of the relationship entity for which the event was sent. It will have a value of "missing" or "normal".  
**EventType**<br>This indicates the reason that the event was sent. Example values are: "new device event", "missing device event", "modified attribute event". |
| SANManagerStatusEvent – events for the Try and Buy product or when Clear Changes have completed. | **ActionPerformed**<br>The action performed for this event. |
Table 20. Event classes and attributes for the Tivoli Enterprise Console (continued)

<table>
<thead>
<tr>
<th>Event class</th>
<th>Event class attributes</th>
</tr>
</thead>
</table>
| SANRegionEvent – events related to a change in the SAN or zone. | **SANName**  
The name of the SAN.  
**ZoneName**  
The name of the zone.  
**State**  
This is from the database tables and would have a value of “missing” or “normal”.  
**EventType**  
This indicates the reason that the event was sent. |
| ServiceEvent – events related to an IBM Tivoli Storage Area Network Manager service starting or stopping. | **ServiceName**  
The name of the service.  
**ServiceState**  
The state of the service. |
Appendix E. Troubleshooting

This section contains information on troubleshooting and how to recover from an error condition. For more information, see the following:
- DB2 documentation on the Data Warehouse DB2 CD-ROM.
- Tivoli NetView documentation.
- IBM Tivoli Storage Area Network Manager (for SAN management problems)

Checking log files

IBM Tivoli Storage Area Network Manager logs or records textual messages of agent, manager, and console events. You can check the log files for these components for event errors at any time. Table 21 displays the default log file locations for all the V1.3 components. This table also shows the default log file locations for the V1.2 agents. Table 22 displays the default log file locations for the V1.1 agents.

Table 21. Default log file locations for V1.3 components

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Component</th>
<th>Log file location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>agent</td>
<td>c:\tivoli\itsanm\agent\log</td>
</tr>
<tr>
<td></td>
<td>manager</td>
<td>c:\tivoli\itsanm\manager\log</td>
</tr>
<tr>
<td></td>
<td>console</td>
<td>c:\tivoli\itsanm\console\log</td>
</tr>
<tr>
<td>AIX</td>
<td>agent</td>
<td>/tivoli/itsanm/agent/log</td>
</tr>
<tr>
<td></td>
<td>manager</td>
<td>/tivoli/itsanm/manager/log</td>
</tr>
<tr>
<td>Solaris</td>
<td>agent</td>
<td>/tivoli/itsanm/agent/log</td>
</tr>
<tr>
<td>Linux (Red Hat and Suse)</td>
<td>agent</td>
<td>/tivoli/itsanm/agent/log</td>
</tr>
</tbody>
</table>

Table 22. Default log file locations for V1.1 agents

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Component</th>
<th>Log file location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>agent</td>
<td>c:\tivoli\itsrm\agent\log</td>
</tr>
<tr>
<td>AIX</td>
<td>agent</td>
<td>/tivoli/itsrm/agent/log</td>
</tr>
<tr>
<td>Solaris</td>
<td>agent</td>
<td>/tivoli/itsrm/agent/log</td>
</tr>
</tbody>
</table>

You can configure the size, type, format, and locale of your Tivoli Storage Area Network Manager message log files. See the IBM Tivoli Storage Area Network Manager User’s Guide for more information.
# Troubleshooting Tivoli NetView problems

*Table 23. Tivoli NetView Problems*

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you get the following error message: Tivoli NetView has determined that the SNMP service is not available. Please install this service before continuing.</td>
<td>Install the SNMP Service. See “Step 5: Install the SNMP service” on page 28.</td>
</tr>
<tr>
<td>The SNMP Service has not been installed.</td>
<td></td>
</tr>
<tr>
<td>If you get the following error message: The user ID or password entered for the outband agent target address &lt;target_address&gt; is incorrect.</td>
<td>An out-of-band scanner encountered an error attempting to use the user ID or password entered for the out-of-band agent target address. Enter the correct user ID or password for the target address. See “Configuring the out-of-band agents” on page 107. If the problem continues, contact IBM customer support.</td>
</tr>
</tbody>
</table>

# Troubleshooting installation problems

*Table 24. Tivoli Storage Area Network Manager Problems*

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
</table>
| Tivoli Storage Area Network Manager cannot create the itsanmdb database (DB2). | If you have a database that is named itsanmdb, and it is not in the format acceptable to Tivoli Storage Area Network Manager, the installation stops because the itsanmdb database cannot be recreated. This assumes that you will use the default database name of itsanmdb. The install program removes all installed components.  
You can drop or rename the itsanmdb database through DB2 from the DB2 console.  
If you cannot drop the itsanmdb database, follow these steps on the DB2 console on Windows:  
1. Catalog the database.  
2. Drop the itsanmdb database.  
3. Uncatalog the database.  
4. Reinstall Tivoli Storage Area Network Manager.                                                                 |
| You receive error message: JVM not found                                | You need to make sure that you have enough temporary disk space to install the manager, managed host, and remote IBM Tivoli Storage Area Network Manager console. See [Table 4 on page 11](#). |
| You receive error message: BTATG0004I A GUID already exists on this host. A new GUID will not be created. | There are files left on the machine after a Tivoli GUID uninstall. These files should not affect IBM Tivoli Storage Area Network Manager operations. Examples of files left on the machine are:  
70 Aug 5 17:24 TIVGUID  
259 Aug 5 17:23 K90itsrm_agent  
265 Aug 5 17:23 S90itsrm_agent |
Table 24. Tivoli Storage Area Network Manager Problems (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>You receive error message:</td>
<td>To display the sensor events for a switch that is only discovered through the in-band discovery, the name specified for the switch must match the short name used to identify the switch in the IP network. Refer to the switch manufacturer for information on configuring this field.</td>
</tr>
<tr>
<td>&quot;Unable to invoke outband scan&quot; on an IP address that is not on a SAN</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BTAQE1112E During an outband scan, the scanner was unable to identify</td>
<td></td>
</tr>
<tr>
<td>the target host.</td>
<td></td>
</tr>
<tr>
<td>When installing the Windows manager, you receive a message saying that</td>
<td>The installation has failed. Look at the installation logs for the reason for the failure.</td>
</tr>
<tr>
<td>the datastore.properties file has been modified. The program will ask if</td>
<td></td>
</tr>
<tr>
<td>you want to delete or not delete the file. Respond with &quot;Yes, delete</td>
<td></td>
</tr>
<tr>
<td>it&quot;.</td>
<td></td>
</tr>
<tr>
<td>You receive error message:</td>
<td>You need to make sure that you have enough temporary disk space to install the manager, managed host, and remote IBM Tivoli Storage Area Network Manager console. See <a href="#">Table 4 on page 11</a>.</td>
</tr>
<tr>
<td>JVM not found</td>
<td></td>
</tr>
<tr>
<td>The remote console is not working and there are DB connection errors in</td>
<td>This can be caused by using a short host name for the DB server. The DB server should have a long host name. Check that the DB URL in the properties file is resolvable on the remote console. To check this, enter a ping from the remote console. See <a href="#">&quot;Step 3: Change the HOSTS file&quot; on page 21</a>.</td>
</tr>
<tr>
<td>the log for the remote console.</td>
<td></td>
</tr>
<tr>
<td>The topology is not updated after a disk is removed or added to a JBOD.</td>
<td>The switch might not generate an event to notify IBM Tivoli Storage Area Network Manager of the removal or addition. The topology might not be updated in this case. However, the switch might send out notification if it is doing other activity and notices that the disk has been added or removed. This is specific to arbitrated loop devices.</td>
</tr>
<tr>
<td>You receive error message:</td>
<td>To display the sensor events for a switch that is only discovered through the in-band discovery, the name specified for the switch must match the short name used to identify the switch in the IP network. Refer to the switch manufacturer for information on configuring this field.</td>
</tr>
<tr>
<td>&quot;Unable to invoke outband scan&quot; on an IP address that is not on a SAN</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BTAQE1112E During an outband scan, the scanner was unable to identify</td>
<td></td>
</tr>
<tr>
<td>the target host.</td>
<td></td>
</tr>
<tr>
<td>After configuring an out-of-band agent and setting the user name and</td>
<td>This is expected behavior and is generated by the switch. No user action is necessary. Tivoli Storage Manager for SAN Management locks the Zoning transaction on the switch before reading the zoning data from the switch. This lock is released after the read operation is performed. The warning message that the Zoning transaction was released is displayed at this point on the switch console.</td>
</tr>
<tr>
<td>password for the out-of-band SNMP Brocade switches, the following</td>
<td></td>
</tr>
<tr>
<td>warning message is displayed on the telnet consoles of Brocade</td>
<td></td>
</tr>
<tr>
<td>Switches. This message will appear on the telnet consoles for which the</td>
<td></td>
</tr>
<tr>
<td>correct log in information was entered, once per each discovery:</td>
<td></td>
</tr>
<tr>
<td>Current Zoning Transaction was aborted. Reason code = Unknown (0)</td>
<td></td>
</tr>
<tr>
<td>You cannot stop an agent daemon.</td>
<td>Make sure that a topology, attribute, or event process is not running before stopping the agent.</td>
</tr>
</tbody>
</table>
### Table 24. Tivoli Storage Area Network Manager Problems (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>You receive error message:</td>
<td>An RNID command was sent to a device that does not support RNID. These messages are informational messages and can be ignored.</td>
</tr>
<tr>
<td>Sending RNID command to device that does not support RNID.</td>
<td></td>
</tr>
<tr>
<td>Out-of-band discovery is not working with a Brocade 2400/2800 or IBM 2109 switch.</td>
<td>It is possible that the FA (also known as FC Management) MIB has not been enabled on the switch. To check and enable, follow these steps:</td>
</tr>
<tr>
<td></td>
<td>1. Telnet to the switch.</td>
</tr>
<tr>
<td></td>
<td>2. Log in.</td>
</tr>
<tr>
<td></td>
<td>3. At the prompt, enter <code>snmpmibcapset</code>.</td>
</tr>
<tr>
<td></td>
<td>4. Make sure that the FA MIB is marked as <code>yes</code> for being enabled. If not, type <code>yes</code> and continue.</td>
</tr>
<tr>
<td></td>
<td>5. The switch does not need to be rebooted at this time.</td>
</tr>
<tr>
<td>You get socket exceptions on the manager.</td>
<td>The problem probably occurred when the agent was shut down momentarily. If the manager received an event at the same time and issued a discovery, the manager was unable to open a socket to the agent because the agent was shut down. Therefore, you will get socket exceptions on the manager. Restart the agent and the manager topology will be updated.</td>
</tr>
<tr>
<td>When installing the agent on a UNIX managed host, you get this error message:</td>
<td>Uninstall and reinstall the GUID manually. To uninstall the GUID, run this command:</td>
</tr>
<tr>
<td>Please read the information below. Missing Tivoli GUID entry.</td>
<td><code>installp -u tivoli.tivguid</code></td>
</tr>
<tr>
<td>Agent Services will not work.</td>
<td>To install the GUID on AIX, run this command:</td>
</tr>
<tr>
<td>Please see GUID install logsin /usr/tivoli/itsanm/agent/log/install</td>
<td><code>installp -aX -d &lt;itsanm_install_dir&gt; /guid/</code></td>
</tr>
<tr>
<td>directory for more details.</td>
<td><code>aix tivoli.tivguid</code></td>
</tr>
<tr>
<td>AIX or Windows agent seems to hang (QLogic HBA installed)</td>
<td>Occasionally, on an AIX agent and on a Windows agent with a QLogic HBA, the inband scanners seem to take a long time to complete when discoveries are triggered while the adapter is trying to reconfigure itself due to changes in the SAN. The inband scanners also do not report the information gathered to the manager. While the AIX scanners will eventually recover, the Windows scanners appear to hang. You may experience a performance degradation on the system when this problem occurs. This problem is resolved with the latest AIX maintenance fixes and with the newer 8.2.x drivers from QLogic for the QLA23xx HBAs. For Windows, the problem is associated with the 8.1.5x drivers from QLogic.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 24. Tivoli Storage Area Network Manager Problems (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you install IBM Tivoli Storage Area Network Manager on Windows and see these error messages: Setting Variables for SRM WASX7357I: By request, this scripting client is not connected to any server process. Certain configuration and application operations will be available in local mode. WASX7318E: Received exception while declaring AdminControl; exception information: com.ibm.ws.scripting. ScriptingException: java.lang.NullPointerException Unable to Set JVM environment on Embedded WAS Express.</td>
<td>Follow this procedure: 1. From the installation directory, run this exe: setup.exe -P beanEARDeploymentWin.active=false 2. When installation is complete, do not reboot at this time. 3. The following directory is missing: &lt;install_dir&gt;/apps/was/config/.repository Copy this directory from a working installation or from the installation image. 4. Place the following files: setDeployEnv.bat launchITSANM.bat into the following directory: &lt;install_dir&gt;/apps/was/bin 5. Edit setDeployEnv.bat. Edit the first 6 variables to fit your installation environment. This file includes the environmental variables. 6. Run the following: &lt;install_dir&gt;/apps/was/bin/launchITSANM.bat 7. Run the following: &lt;install_dir&gt;/apps/was/bin/startServer.bat server1 8. Verify that IBM Tivoli Storage Area Network Manager is running. 9. Run the following: &lt;install_dir&gt;/apps/was/bin/stopServer.bat server1 10. Reboot your system.</td>
</tr>
<tr>
<td>When you install the remote console using launch.exe, the machine’s automatic rebooting at the end of installation just hangs. An error message is issued saying that the Installation Wizard program is not responding. The Wizard forces an end of program.</td>
<td>This is a problem with InstallShield. Reboot the machine.</td>
</tr>
<tr>
<td>When you install the Solaris version 1.3 agent on the managed host and you have a version 1.1 agent installed, the old version 1.1 does not get uninstalled.</td>
<td>This is a problem with InstallShield. Manually uninstall the version 1.1 agent.</td>
</tr>
<tr>
<td>The DB2 log files fill up the partition space.</td>
<td>Issue this DB2 command for ITSANMDB: db2 get db cfg Search the “First active log file” for the current log. To reduce the log file size, delete the deactivated (older) logs or the archived logs whenever it is necessary. Do not delete the active log. You can also delete the UDB log history file or log files. See also “Archiving database logs” on page 205.</td>
</tr>
</tbody>
</table>

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### Table 24. Tivoli Storage Area Network Manager Problems (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>You receive the following error messages in the Clou dscape log:</td>
<td>You can ignore these messages.</td>
</tr>
<tr>
<td>Could not get IO for connection to: host localhost, port 9553.</td>
<td></td>
</tr>
<tr>
<td>(At the start of the log)</td>
<td></td>
</tr>
<tr>
<td>ERROR 23500: The statement was aborted because it would have caused a duplicate file.</td>
<td></td>
</tr>
</tbody>
</table>

### Taking a database snapshot

If you contact IBM customer support about a problem with IBM Tivoli Storage Area Network Manager, you may be asked to provide a snapshot of the IBM Tivoli Storage Area Network Manager database. Customer support uses the snapshot to view your SAN topology and connectivity for troubleshooting the SAN hardware and cabling. You should create a database snapshot only when it is requested by customer support.

The database snapshot collects important files, configuration information, date, and time which is automatically packaged in a zip file: ITSANManager.zip.

To take a snapshot of the IBM Tivoli Storage Area Network Manager database, do the following:

1. From the Tivoli NetView menu bar, select the following:
   SAN ➞ Configure Manager
2. The Storage Area Network Manager Configuration panel is displayed. Click Configure Manager.
3. The SAN Configuration notebook is displayed. Click the Advanced tab.
4. The Advanced panel is displayed. Click Database Snapshot button. This can take a few minutes depending on how large your database is. The status area indicates the progress of the snapshot.
When you create a snapshot of your database, Tivoli Storage Area Network Manager immediately saves the current data to a zip file named ITSANMservice.zip on the manager machine. You can locate the zip file in the base installation service directory of Tivoli Storage Area Network Manager, for example, \tivoli\itsanm\manager\service. Customer support will then request that you transmit the zip file by using a method such as FTP or e-mail.
Appendix F. Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in this product enable users to do the following:

- Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using those technologies with this product.
- Operate specific or equivalent features by using only the keyboard.
- Magnify what is displayed on the screen.

In addition, the product documentation was modified to include features to aid accessibility:

- All documentation is available in both HTML and convertible PDF formats to give the maximum opportunity for users to apply screen-reader software.
- All images in the documentation are provided with alternative text so that users with vision impairments can understand the contents of the images.

Navigating the interface using the keyboard

Standard shortcut and accelerator keys are used by the product and are documented by the operating system. Refer to the documentation provided by your operating system for more information.

Magnifying what is displayed on the screen

You can enlarge information on the product windows using facilities provided by the operating systems on which the product is run. For example, in a Microsoft Windows environment, you can lower the resolution of the screen to enlarge the font sizes of the text on the screen. Refer to the documentation provided by your operating system for more information.
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Glossary

The terms in this glossary are defined as they pertain to the IBM Tivoli Storage Area Network Manager library. If you do not find the term you need, refer to the IBM Software Glossary on the Web at this site:
http://www.ibm.com/ibm/terminology/

A

agent. An entity that represents one or more managed objects by (a) emitting notifications regarding the objects and (b) handling requests from managers for management operations to modify or query the objects. See also IBM Tivoli Storage Area Network Manager agent.

C

community name. The part of an SNMP message that represents a password-like name and that is used to authenticate the SNMP message.

data collection. See discovery.

discovery. The process of finding resources within an enterprise, including finding the new location of monitored resources that were moved. In IBM Tivoli Storage Area Network Manager, the process detects logical and physical storage resources in the storage environment, and their interconnections (also called topology). IBM Tivoli Storage Area Network Manager also collects attributes of storage resources, such as vital product data, and capacity and utilization measurements. Discovery includes the detection of changes in network topology, such as new and deleted nodes or new and deleted interfaces. See also discovery interval.

discovery interval. The frequency at which topology and attribute information is gathered by the IBM Tivoli Storage Area Network Manager agents and sent to the manager. The discovery interval is set by a schedule to occur either periodically or at specific times. Discovery can also occur at other times, such as when triggered by an event from a SAN switch.

E

event. In the Tivoli environment, any significant change in the state of a system resource, network resource, or network application. An event can be generated for a problem, for the resolution of a problem, or for the successful completion of a task. Examples of events are: the normal starting and stopping of a process, the abnormal termination of a process, or the malfunctioning of a server.

G

globally unique identifier (GUID). A 16-byte code that identifies an interface to an object across all computers and networks. The identifier is unique because it contains a time stamp and a code based on the network address that is hard-wired on the host computer’s LAN interface card.

H

host. A computer that is connected to a network (such as the Internet or a SAN) and provides a point of access to that network. Also, depending on the environment, the host can provide centralized control of the network. The host can be a client, a server, both a client and a server, a manager, or a managed host.

IBM Tivoli Storage Area Network Manager agent. The software on a managed host that performs local functions such as file system monitoring and in-band discovery. The functions are performed in coordination with the manager.

in-band discovery. The process of discovering information about the SAN, including topology and attribute data, through the Fibre Channel data paths. Contrast with out-of-band discovery.

I

IBM Tivoli Storage Area Network Manager agent.

logical unit number (LUN). An identifier used on a SCSI bus to distinguish among devices (logical units) with the same SCSI ID.

LUN. See logical unit number.

M

managed host. A host that is managed by IBM Tivoli Storage Area Network Manager. The host has an IBM
Tivoli Storage Area Network Manager agent installed and active on it. Managed hosts are used for in-band discovery of the SAN.

**manager.** The IBM Tivoli Storage Area Network Manager component that is installed on a host and provides centralized control of the product. The manager gathers data from SNMP agents and agents on managed hosts and provides graphical displays of SANs. The manager can also forward events to the Tivoli Enterprise Console or an SNMP console.

**remote console.** An IBM Tivoli Storage Area Network Manager console that is installed on a machine other than the one on which the manager is installed. A remote console lets you access IBM Tivoli Storage Area Network Manager from any location.

**out-of-band discovery.** The process of discovering SAN information, including topology and device data, without using the Fibre Channel data paths. A common mechanism for out-of-band discovery is the use of SNMP MIB queries, which are invoked over a TCP/IP network. Contrast with in-band discovery.

**topology.** The physical and logical arrangement of devices in a storage area network (SAN). Topology can be displayed graphically, showing devices and their interconnections.

**VSAN.** See virtual storage area network.

**virtual storage area network (VSAN).** A Cisco technology that allows independent logical fabrics to be defined from a set of one or more physical switches. A given switch port is assigned to only one VSAN. Each VSAN is completely isolated from the other VSANs and functions as a separate and independent fabric with its own set of fabric services (for example, Name Services, zoning, routing, and so on).

**zone.** A segment of a SAN fabric composed of selected storage devices nodes and server nodes. Only the members of a zone have access to one another.

**zone members.** The devices in a zone.

**zone set.** A group of zones that function together on the fabric. Each zone set can accommodate up to 256
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