Program Directory for
Tivoli Storage Manager
Enterprise Edition
for OS/390 and z/OS
Version 5 Release 1
Program Number 5698-ISE

FMID HDN5510

for Use with
OS/390
z/OS

Document Date: June 2002
Before using this information and the product it supports, be sure to read the general information under “Notices” on page v.
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APAR numbers are provided in this document to assist in locating PTFs that may be required. Ongoing problem reporting may result in additional APARs being created. Therefore, the APAR lists in this document may not be complete. To obtain current service recommendations and to identify current product service requirements, always contact the IBM and/or Tivoli Customer Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

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1.0 Introduction

This program directory is intended for the system programmer responsible for program installation and maintenance. It contains information concerning the material and procedures associated with the installation of Tivoli Storage Manager. This publication refers to Tivoli Storage Manager as Tivoli Storage Manager. You should read all of this program directory before installing the program and then keep it for future reference.

The program directory contains the following sections:

- 2.0, “Program Materials” on page 3 identifies the basic and optional program materials and documentation for Tivoli Storage Manager.
- 3.0, “Program Support” on page 7 describes the IBM and/or Tivoli support available for Tivoli Storage Manager.
- 4.0, “Program and Service Level Information” on page 9 lists the APARs (program level) and PTFs (service level) incorporated into Tivoli Storage Manager.
- 5.0, “Installation Requirements and Considerations” on page 10 identifies the resources and considerations for installing and using Tivoli Storage Manager.
- 6.0, “Installation Instructions” on page 17 provides detailed installation instructions for Tivoli Storage Manager. It also describes the procedures for activating the functions of Tivoli Storage Manager, or refers to appropriate publications.

Before installing Tivoli Storage Manager, read 3.2, “Preventive Service Planning” on page 7. This section tells you how to find any updates to the information and procedures in this program directory.

Do not use this program directory if you are installing Tivoli Storage Manager with a SystemPac or ServerPac. When using these offerings, use the jobs and documentation supplied with the offering. This documentation may point you to specific sections of the program directory as required.

If you are installing Tivoli Storage Manager using the Custom-Built Product Delivery Offering (CBPDO, 5751-CS3), a softcopy program directory is provided on the CBPDO tape which is identical to the printed copy shipped with your order. Your CBPDO contains a softcopy preventive service planning (PSP) upgrade for this product. All service and HOLDDATA for Tivoli Storage Manager are included on the CBPDO tape.

1.1 Tivoli Storage Manager Description

Tivoli Storage Manager is a client/server program that provides storage management solutions to customers in a multivendor computer environment. Tivoli Storage Manager provides an automated, centrally scheduled, policy-managed backup, archive, and space-management facility for file servers and workstations.
1.2 Tivoli Storage Manager FMIDs

Tivoli Storage Manager consists of the following FMIDs:

- HDN5510
- JDN5511
2.0  Program Materials

An IBM and/or Tivoli program is identified by a program number and a feature number. The program number for Tivoli Storage Manager is 5698-ISE.

Basic Machine-Readable Materials are materials that are supplied under the base license and feature code, and are required for the use of the product. Optional Machine-Readable Materials are orderable under separate feature codes, and are not required for the product to function.

The program announcement material describes the features supported by Tivoli Storage Manager. Ask your IBM and/or Tivoli representative for this information if you have not already received a copy.

2.1 Basic Machine-Readable Material

The distribution medium for this program is magnetic tape or downloadable files. It is installed using SMP/E, and is in SMP/E RELFILE format. See 6.0, “Installation Instructions” on page 17 for more information about how to install the program.

Figure 1 describes the physical tape. Figure 2 describes the file content.

Notes:

1. The data set attributes in these tables should be used in the JCL of jobs reading the data sets, but since the data sets are in IEBCOPY unloaded format, their actual attributes may be different.

2. If you are installing Tivoli Storage Manager using the Custom-Built Product Delivery Offering (CBPDO) (5751-CS3), some of the information in these figures may not be valid. Consult the CBPDO documentation for actual values.

3. If any RELFILEs are identified as PDSEs, ensure that SMPTLIB data sets are allocated as PDSEs.

<table>
<thead>
<tr>
<th>Medium</th>
<th>Feature Number</th>
<th>Physical Volume</th>
<th>External Label</th>
<th>R/M *</th>
<th>VOLSER</th>
</tr>
</thead>
<tbody>
<tr>
<td>3480 cart</td>
<td>5804/5814/</td>
<td>1</td>
<td>TSMV5R1M0 MVS 1 of 1</td>
<td>N</td>
<td>DN5510</td>
</tr>
<tr>
<td></td>
<td>5824/5834/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5844/5854/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5864/5874/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5884/5894</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* R/M = Restricted Materials of IBM
A description of the contents of each file follows:

<table>
<thead>
<tr>
<th>FileName</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM.HDN5510.F1</td>
<td>Server JCLIN</td>
</tr>
<tr>
<td>IBM.HDN5510.F2</td>
<td>Server samples</td>
</tr>
<tr>
<td>IBM.HDN5510.F3</td>
<td>Server executables</td>
</tr>
<tr>
<td>IBM.HDN5510.F4</td>
<td>Server auxiliary parts</td>
</tr>
<tr>
<td>IBM.HDN5510.F5</td>
<td>Web Server Images</td>
</tr>
<tr>
<td>IBM.JDN5511.F1</td>
<td>TSO Admin Client JCLIN</td>
</tr>
<tr>
<td>IBM.JDN5511.F2</td>
<td>TSO Admin Client samples</td>
</tr>
<tr>
<td>IBM.JDN5511.F3</td>
<td>TSO Admin Client executables</td>
</tr>
<tr>
<td>IBM.JDN5511.F4</td>
<td>TSO Admin Client auxiliary parts</td>
</tr>
</tbody>
</table>

### 2.2 Optional Machine-Readable Material

No optional machine-readable materials are provided for Tivoli Storage Manager.

### 2.3 Program Publications

The following sections identify the basic and optional publications for Tivoli Storage Manager.
2.3.1 Basic Program Publications

Figure 3 on page 5 identifies the basic unlicensed program publications for Tivoli Storage Manager. One copy of each of these publications is included when you order the basic materials for Tivoli Storage Manager. For additional copies, contact your IBM and/or Tivoli representative.

<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tivoli Storage Manager Version 5 Release 1 Product Publications</td>
<td>SK3T-8176</td>
</tr>
<tr>
<td>Tivoli Storage Manager for OS/390 and z/OS Quick Start Version 5 Release 1</td>
<td>GC32-0777</td>
</tr>
</tbody>
</table>

2.3.2 Optional Program Publications

No optional publications are provided for Tivoli Storage Manager.

The Tivoli Storage Manager Program Directory, along with other Tivoli Program Directories can be found at the following Web site:

https://www.tivoli.com/secure/support/documents/s390/program_directories

This is on the Tivoli support web site and if you have not already registered with Tivoli for access you will need to do so the first time you access this url. Once you register, you will receive a userid and password within 72 hours.

2.4 Program Source Materials

No program source materials or viewable program listings are provided for Tivoli Storage Manager.

2.5 Publications Useful During Installation

The publications listed in Figure 4 may be useful during the installation of Tivoli Storage Manager. To order copies, contact your IBM and/or Tivoli representative or visit the IBM and/or Tivoli Publications Center at the following Web site:


<table>
<thead>
<tr>
<th>Publication Title</th>
<th>Form Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS/390 SMP/E User's Guide</td>
<td>SC28-1740</td>
</tr>
<tr>
<td>OS/390 SMP/E Commands</td>
<td>SC28-1805</td>
</tr>
<tr>
<td>Publication Title</td>
<td>Form Number</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>OS/390 SMP/E Reference</td>
<td>SC28-1806</td>
</tr>
<tr>
<td>OS/390 SMP/E Messages and Codes</td>
<td>SC28-1738</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS and OS/390 User's Guide</td>
<td>SA22-7773</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS and OS/390 Commands</td>
<td>SA22-7771</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS and OS/390 Reference</td>
<td>SA22-7772</td>
</tr>
<tr>
<td>IBM SMP/E for z/OS and OS/390 Messages, Codes, and Diagnosis</td>
<td>GA22-7770</td>
</tr>
</tbody>
</table>
3.0 Program Support

This section describes the IBM and/or Tivoli support available for Tivoli Storage Manager.

3.1 Program Services

Contact your IBM and/or Tivoli representative for specific information about available program services.

3.2 Preventive Service Planning

Before installing Tivoli Storage Manager, you should review the current Preventive Service Planning (PSP) information. If you obtained Tivoli Storage Manager as part of a CBPDO, there is HOLDDATA and PSP information included on the CBPDO.

If you obtained Tivoli Storage Manager on a product tape, or if the CBPDO is more than two weeks old when you install it, you should contact the IBM and/or Tivoli Support Center or use S/390 SoftwareXcel to obtain the current "PSP Bucket".

For access to RETAIN, visit http://www.ibm.com on the Internet.

PSP Buckets are identified by UPGRADEs, which specify product levels, and SUBSETs, which specify the FMIDs for a product level. The UPGRADE and SUBSET values for Tivoli Storage Manager are:

<table>
<thead>
<tr>
<th>UPGRADE</th>
<th>SUBSET</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSM510</td>
<td>HDN5510</td>
<td>Server</td>
</tr>
<tr>
<td></td>
<td>JDN5511</td>
<td>TSO Admin Client</td>
</tr>
</tbody>
</table>

Warning: The Tivoli Storage Manager product frequently incorporates new function through PTFs. These enhancements along with new/changed messages and options, descriptions for included APARs and other valuable information are documented in README files, named ANR5510 and ANS5511 as members in the distributed SAMPLIB. The README files will be for the server and the TSO Admin Client. The members must be reviewed by the Tivoli Storage Manager Administrator before placing Tivoli Storage Manager into production.

The README members are cumulative files and the updates are added in ascending chronological order. A “Table of Contents” is at the beginning of the file. Each file is appended and replaced with a new PTF for the appropriate area.
3.3 Statement of Support Procedures

Report any difficulties you have using this program to your IBM and/or Tivoli Support Center. If an APAR is required, the Support Center will provide the address to which any needed documentation can be sent.

Figure 6 on page 8 identifies the component IDs (COMPID) for Tivoli Storage Manager.

<table>
<thead>
<tr>
<th>FMID</th>
<th>COMPID</th>
<th>Component Name</th>
<th>RETAIN Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDN5510</td>
<td>5698ISMVS</td>
<td>Server</td>
<td>510</td>
</tr>
<tr>
<td>JDN5511</td>
<td>5698ISMVS</td>
<td>TSO Admin Client</td>
<td>511</td>
</tr>
</tbody>
</table>
4.0 Program and Service Level Information

This section identifies the program and any relevant service levels of Tivoli Storage Manager. The program level refers to the APAR fixes incorporated into the program. The service level refers to the PTFs integrated.

4.1 Program Level Information

A number of APAR fixes against previous releases of Tivoli Storage Manager have been incorporated into this release. However, a list of the APARs is not being included in this program directory because of the large number of APARs.

4.2 Service Level Information

PTFs containing APAR fixes against this release of Tivoli Storage Manager have been incorporated into this product tape. For a list of included PTFs, examine the ++VER statement in the product's SMPMCS.
5.0 Installation Requirements and Considerations

The following sections identify the system requirements for installing and activating Tivoli Storage Manager. The following terminology is used:

- **Driving system**: the system used to install the program.
- **Target system**: the system on which the program is installed.

In many cases, the same system can be used as both a driving system and a target system. However, you may want to set up a clone of your system to use as a target system by making a separate IPL-able copy of the running system. The clone should include copies of all system libraries that SMP/E updates, copies of the SMP/E CSI data sets that describe the system libraries, and your PARMLIB and PROCLIB.

Some cases where two systems should be used include the following:

- When installing a new level of a product that is already installed, the new product will delete the old one. By installing onto a separate target system, you can test the new product while still keeping the old one in production.
- When installing a product that shares libraries or load modules with other products, the installation can disrupt the other products. Installing onto a test system or clone will allow you to assess these impacts without disrupting your production system.

5.1 Driving System Requirements

This section describes the environment of the driving system required to install Tivoli Storage Manager.

5.1.1 Machine Requirements

The driving system can run in any hardware environment that supports the required software.

5.1.2 Programming Requirements

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5647-A01</td>
<td>OS/390 SMP/E Version 2 Release 8 or higher</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS Version 1 Release 1 or higher</td>
</tr>
<tr>
<td>5655-G44</td>
<td>IBM SMP/E for z/OS and OS/390 Version 3 Release 1 or higher</td>
</tr>
</tbody>
</table>

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5.2 Target System Requirements

This section describes the environment of the target system required to install and use Tivoli Storage Manager.

Tivoli Storage Manager installs in the MVS (Z038) SREL.

5.2.1 Machine Requirements

The target system can run in any hardware environment that supports the required software.

5.2.2 Programming Requirements

5.2.2.1 Mandatory Requisites

A mandatory requisite is defined as a product that is required without exception; this product either will not install or will not function unless this requisite is met. This includes products that are specified as REQs or PREs.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any one of the following:</td>
<td></td>
</tr>
<tr>
<td>5647-A01</td>
<td>OS/390 Version 2 Release 8 or higher</td>
</tr>
<tr>
<td>5694-A01</td>
<td>z/OS Version 1 Release 1 or higher</td>
</tr>
</tbody>
</table>

5.2.2.2 Functional Requisites

A functional requisite is defined as a product that is not required for the successful installation of this product or for the basic function of the product, but is needed at run time for a specific function of this product to work. This includes products that are specified as IF REQs.

<table>
<thead>
<tr>
<th>Program Number</th>
<th>Product Name and Minimum VRM/Service Level</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any one of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5647-A01</td>
<td>Language Environment in OS/390 Version 2 Release 8 or higher</td>
<td>Run Time Library¹</td>
</tr>
<tr>
<td>5694-A01</td>
<td>Language Environment in Version 1 Release 1 of z/OS or higher</td>
<td>Run Time Library¹</td>
</tr>
</tbody>
</table>

Any one of the following:
The Language Environment link library must be available if either IBM TCP/IP or Sterling Software TCPaccess is to be included in the client module.

The IBM TCP/IP link library must be available if IBM TCP/IP is to be included in the client module.

The Sterling Software TCPaccess link library must be available if TCPaccess is to be included in the client module.

### 5.2.3 DASD Storage Requirements

Tivoli Storage Manager libraries can reside on all supported DASD types.

Figure 10 lists the total space required for each type of library.

<table>
<thead>
<tr>
<th>Library Type</th>
<th>Total Space Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>20megabytes</td>
</tr>
<tr>
<td>Distribution</td>
<td>20megabytes</td>
</tr>
</tbody>
</table>

Notes:

1. IBM and Tivoli recommend the use of system determined block sizes for efficient DASD utilization for all non-RECFM U data sets. For RECFM U data sets, IBM and Tivoli recommend a block size of 32760, which is the most efficient from a performance and DASD utilization perspective.

2. Abbreviations used for the data set type are:

   U Unique data set, allocated by this product and used only by this product. To determine the correct storage needed for this data set, this table provides all required information; no other tables (or program directories) need to be referenced for the data set size.
S Shared data set, allocated by this product and used by this product and others. To determine the correct storage needed for this data set, the storage size given in this table needs to be added to other tables (perhaps in other program directories). If the data set already exists, it must have enough free space to accommodate the storage size given in this table.

E Existing shared data set, used by this product and others. This data set is NOT allocated by this product. To determine the correct storage needed for this data set, the storage size given in this table needs to be added to other tables (perhaps in other program directories). This existing data set must have enough free space to accommodate the storage size given in this table.

If you currently have a previous release of this product installed in these libraries, the installation of this release will delete the old one and reclaim the space used by the old release and any service that had been installed. You can determine whether or not these libraries have enough space by deleting the old release with a dummy function, compressing the libraries, and comparing the space requirements with the free space in the libraries.

For more information on the names and sizes of the required data sets, please refer to 6.1.7, “Allocate SMP/E Target and Distribution Libraries” on page 22.

3. Abbreviations used for the HFS Path type are:

N New path, created by this product.
X Path created by this product, but may already exist from a previous release.
P Previously existing path, created by another product.

4. All target and distribution libraries listed have the following attributes:

- The default name of the data set may be changed
- The default block size of the data set may be changed
- The data set may be merged with another data set that has equivalent characteristics
- The data set may be either a PDS or a PDSE

5. All target libraries listed have the following attributes:

- The data set may be SMS managed
- It is not required for the data set to be SMS managed
- It is not required for the data set to reside on the IPL volume
- The values in the "Member Type" column are not necessarily the actual SMP/E element types identified in the SMPMCS.

6. All target libraries listed which contain load modules have the following attributes:

- The data set may be in the LPA
- It is not required for the data set to be in the LPA
- The data set may be in the LNKLST
- It is not required for the data set to be APF authorized

The following figures describe the target and distribution libraries required to install Tivoli Storage Manager. The storage requirements of Tivoli Storage Manager must be added to the storage required by other programs having data in the same library.
Note: The data in these tables should be used when determining which libraries can be merged into common data sets. In addition, since some ALIAS names may not be unique, ensure that no naming conflicts will be introduced before merging libraries.

**Figure 11. Storage Requirements for Tivoli Storage Manager Target Libraries**

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Member Type</th>
<th>Target Volume</th>
<th>TYPE</th>
<th>ORG</th>
<th>RECFM</th>
<th>LREC</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINKLIB</td>
<td>LMOD</td>
<td>ANY</td>
<td>E</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>360</td>
<td>3</td>
</tr>
<tr>
<td>SAMPLIB</td>
<td>Sample</td>
<td>ANY</td>
<td>E</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>SANRHLP</td>
<td>Help</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>84</td>
<td>1</td>
</tr>
<tr>
<td>SANRIMG</td>
<td>Panel</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>VB</td>
<td>8196</td>
<td>61</td>
<td>68</td>
</tr>
<tr>
<td>SANRMSG</td>
<td>Message</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>SANSINC1</td>
<td>LMOD</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SANSINC2</td>
<td>LMOD</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SANSINC3</td>
<td>LMOD</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SANSMSG</td>
<td>Message</td>
<td>ANY</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>

**Figure 12. Storage Requirements for Tivoli Storage Manager Distribution Libraries**

<table>
<thead>
<tr>
<th>Library DDNAME</th>
<th>Target Volume</th>
<th>TYPE</th>
<th>ORG</th>
<th>RECFM</th>
<th>LREC</th>
<th>No. of 3390 Trks</th>
<th>No. of DIR Blks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AANRLOAD</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>340</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AANSLOAD</td>
<td>U</td>
<td>PDS</td>
<td>U</td>
<td>0</td>
<td>20</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AANRHLP</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>84</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AANRIMG</td>
<td>U</td>
<td>PDS</td>
<td>VB</td>
<td>8196</td>
<td>61</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>AANRMSG</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AANSMSG</td>
<td>U</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ASAMPLIB</td>
<td>E</td>
<td>PDS</td>
<td>FB</td>
<td>80</td>
<td>24</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
5.3 FMIDs Deleted

Installing Tivoli Storage Manager may result in the deletion of other FMIDs. To see what FMIDs will be deleted, examine the ++VER statement in the product’s SMPMCS.

If you do not wish to delete these FMIDs at this time, you must install Tivoli Storage Manager into separate SMP/E target and distribution zones.

Note: These FMIDs will not automatically be deleted from the Global Zone. Consult the SMP/E manuals for instructions on how to do this.

5.4 Special Considerations

Migration to Version 5 Release 1 Installation Considerations

If you are installing Version 5 Release 1 server over a Tivoli Storage Manager Version 4.1 or Version 4.2 server, it is necessary and extremely important that you read and follow the steps outlined in “Migrating to Tivoli Storage Manager Version 5 Release 1” in the Tivoli Storage Manager for OS/390 and z/OS Quick Start book before you begin this installation.

- Version 5 Release 1 will supercede earlier versions of Tivoli Storage Manager if the earlier version is in the same zone where Version 5 Release 1 is to be installed. If you wish to retain an earlier version of Tivoli Storage Manager, Version 5 Release 1 must be installed in a zone different from the zone where the earlier version resides.

- To fully comply with IBM MVS packaging rules, the Target library names are prefixed with SANR (server) and SANS (TSO admin client).

Important information is also included in the SAMPLIB members ANR5510 (server) and ANS5511 (client). In addition, with the product material you receive, there should be a “Read Me First” hardcopy document that contains any information that MUST be read in conjunction with these materials. Please refer to this information FIRST.

In order for Tivoli Storage Manager to execute with your operating system, the following important items must be considered:

- If the Tivoli Storage Manager modules ANRSERV (alias DSMSERV) and ANRSVM5 are not installed in SYS1.LINKLIB, then they must be installed in an APF authorized library. Ensure the library is specified in your IEAAPFxX SYS1.PARMLIB member.

- The client module ANSADM (alias DSMADM) must be installed in the same library where the server module ANRSERV (alias DSMSERV) and the ANRSVM5 module are installed.

- DO NOT put the server and client modules, ANRSERV (alias DSMSERV), ANRSVM5, and ANSADM (alias DSMADM) in SYS1.LPALIB.

- The LLA (library lookaside address space) must be refreshed after installing or servicing Tivoli Storage Manager when the server and client modules reside in a library that is defined in a
CSVLLAxx PARMLIB member or in a LNKLST dataset. Stop the server before refreshing the LLA.

- No entry is required in the Program Properties Table.

- The Server Start Procedure and the TSO Admin Client LOGON Procedure may reside in a procedure library other than SYS1.PROCLIB; ensure the procedure library is in the system search order.

- Multiple extent allocations for the VSAM linear data sets are not supported. Also, VSAM extended linear datasets are not supported.

    You should consider allocating the VSAM linear data sets for the data base clusters on separate volumes from the logs and storage pools, both for performance and availability.

- The Language Environment run-time library must be APF authorized. Also, if the library is not part of the link library list, LNKLSTxx, it must be specified with a STEPLIB DD statement in the job that is used to start the server.

- If necessary, the SYSMDUMP dump options may need to be modified for service diagnosis. Some, or all, of the following dump options may be requested: CSA, NUC, LPA, LSQA, PSA, RGN, SWA, TRT.

    The dump options can be set through the SYS1.PARMLIB member named IEADMR00 or with the CHNGDUMP command (an MVS system command).

- The Tivoli Storage Manager will use the UNIX System Services (USS) sockets API for communications with clients. This may require a change to the BPXPRMxx PARMLIB member for your installation (xx is a unique set of characters set by your systems programmer). In the BPXPRMxx member you will find statements similar to the following:

    ```
    FILESYSTYPE TYPE(INET) ENTRYPOINT(EZBPFINI)
    NETWORK DOMAINNAME(AF_INET)
    домAINNUMBER(2)
    MAXSOCKETS(200)
    TYPE(INET)
    ```

    or the following:

    ```
    FILESYSTYPE TYPE(CINET) ENTRYPOINT(BPXTCINT)
    NETWORK DOMAINNAME(AF_INET)
    домAINNUMBER(2)
    MAXSOCKETS(200)
    TYPE(CINET)
    ```

    The value specified with the MAXSOCKETS keyword must be greater than the value specified with the Tivoli Storage Manager server option MAXSESSIONS.
6.0 Installation Instructions

This chapter describes the installation method and the step-by-step procedures to install and to activate the functions of Tivoli Storage Manager.

Please note the following:

- If you want to install Tivoli Storage Manager into its own SMP/E environment, consult the SMP/E manuals for instructions on creating and initializing the SMPCSI and the SMP/E control data sets. Additionally, to assist you in doing this, Tivoli has provided samples to help you create an SMP/E environment at the following url:
  This is on the Tivoli support web site and if you have not already registered with Tivoli for access you will need to do so the first time you access this url. Once you register, you will receive a userid and password within 72 hours.

- Sample jobs have been provided to help perform some or all of the installation tasks. The SMP/E jobs assume that all DDDEF entries required for SMP/E execution have been defined in the appropriate zones.

- The SMP/E dialogs may be used instead of the sample jobs to accomplish the SMP/E installation steps.

6.1 Installing Tivoli Storage Manager

6.1.1 SMP/E Considerations for Installing Tivoli Storage Manager

This release of Tivoli Storage Manager is installed using the SMP/E RECEIVE, APPLY, and ACCEPT commands. The SMP/E dialogs may be used to accomplish the SMP/E installation steps.

6.1.2 SMP/E Environment

All SMP/E installation jobs provided assume that all necessary DD statements for the execution of SMP/E are defined using DDDEFs.

Sample jobs are provided to assist you in installing Tivoli Storage Manager. After the RECEIVE step has been completed, the sample jobs can be found in SMPTLIB hlq.HDN5510.F2 (hlq is the high level qualifier defined in the DSPREFIX in the CSI). Make a copy of these jobs in your own library and modify them to use during the installation of Tivoli Storage Manager. The sample jobs are:

ANRRECEV Sample RECEIVE job.
ANRALLOC Sample job to allocate target and distribution libraries.
ANRDDDEF Sample job to define required SMP/E DDDEFs.
**ANRAPPCK** Sample APPLY CHECK job.

**ANRAPPLY** Sample APPLY job.

**ANRACCCK** Sample ACCEPT CHECK job.

**ANRACCEP** Sample ACCEPT job.

**ANRRPTCL** Sample REPORT CALLLIBS job for creating a link-edit job. This job should only be used when the TSO Admin Client module must be re-linked at a later time.

In the sample SMP/E jobs provided, the name of the SMP/E CSI is #GLOBALCSI. The global zone name in the SMP/E CSI is GLOBAL. The distribution zone name is #DZONE. The target zone name is #TZONE. The sample jobs should be updated to reflect the CSI and zone names used at your installation.

### 6.1.3 SMP/E Options Subentry Values

The recommended values for some SMP/E CSI subentries are shown in Figure 13. Use of values lower than these may result in failures in the installation process. DSSPACE is a subentry in the GLOBAL options entry. PEMAX is a subentry of the GENERAL entry in the GLOBAL options entry. Refer to the SMP/E manuals for instructions on updating the global zone.

<table>
<thead>
<tr>
<th>SUB-ENTRY</th>
<th>Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSSPACE</td>
<td>(15,15,47)</td>
<td>TLIB default allocation parameters</td>
</tr>
<tr>
<td>PEMAX</td>
<td>SMP/E Default</td>
<td>IBM and Tivoli recommend using the SMP/E default for PEMAX.</td>
</tr>
</tbody>
</table>

### 6.1.4 SMP/E CALLLIBS Processing

The Tivoli Storage Manager TSO Admin Client module is installed using the SMP/E CALLLIBS function. During APPLY processing the client module will be link-edited from a RECEIVE staging library into the SMPLTS dataset; no link libraries are needed. Then, the client module will be link-edited from the SMPLTS dataset into the target library; link libraries needed by this step are defined with the ANRDDDEF job.

For the install to work properly, ensure the following:

- Verify that the SMP/E SMPLTS data set has been allocated. Refer to *SMP/E Reference* for information on allocating the SMPLTS data set. The dataset must be large enough to hold the client module as distributed.
- Allocate datasets. This will be done when you modify and run the sample job ANRALLOC. Datasets with the following low-level qualifiers must be allocated:
  - **SANSINC1** Used to indicate that neither the IBM TCP/IP functions nor the Sterling Software TCPaccess functions be included in the client module.
  - **SANSINC2** Used to indicate that the IBM TCP/IP functions be included in the client module.
SANSINCL3 Used to indicate that the Sterling Software TCPaccess functions be included in the client module.

- Define the appropriate DDDEFs for installing the client module. Modify the sample job ANRDDDEF by following the instructions that are included in the sample job and in the text that follows.

ANRDDDEF includes DDDEF statements for installing Tivoli Storage Manager. The following information applies to DDDEF statements required to install the client module with SMP/E CALLLIBS. The DDDEF statements identify the dataset names of libraries needed for link-editing the client module into the target library. These dataset names will be used by SMP/E CALLLIBS to modify a prototype of a link-edit job. The prototype includes the following SYSLIB DD statements that will be modified:

```
//SYSLIB DD DSN=SYS1.SANSINCL,DISP=SHR
// DD DSN=TCPAC.SANSSST,DISP=SHR
// DD DSN=LEMVS.SANSSCEE,DISP=SHR
```

The low-level qualifier of each of the dataset names found in the prototype identifies the DDDEF that will be searched for by CALLLIBS. Once the DDDEF is found, the dataset name associated with it will replace the dataset name found in the prototype.

For example, the first dataset name is SYS1.SANSINCL. The low-level qualifier is SANSINCL and is the name of a DDDEF that must be located. Once located, the dataset name associated with the DDDEF (for example TIVSM51.SANSINC1) will replace SYS1.SANSINCL. The other dataset names associated with the SYSLIB DD statement are modified by SMP/E in a similar manner.

Before proceeding, decide if the IBM TCP/IP functions or the Sterling Software TCPaccess functions or neither are to be included in the client module. Then modify ANRDDDEF as indicated in the following instructions:

SANSINCL Identifies the dataset that will indicate whether IBM TCP/IP functions or Sterling Software TCPaccess functions or neither are to be included in the client module. Select one of the following:

1. Specify the dataset name associated with DDDEF SANSINC1 to indicate that neither IBM TCP/IP functions nor Sterling Software TCPaccess functions are to be included in the client module.

2. Specify the dataset name associated with DDDEF SANSINC2 to indicate that IBM TCP/IP functions are to be included in the client module.

3. Specify the dataset name associated with DDDEF SANSINC3 to indicate that Sterling Software TCPaccess functions are to be included in the client module.

SANSTCP Identifies the dataset name of the IBM TCP/IP SEZACMTX library. Select one of the following:

1. Specify the dataset name associated with DDDEF SANSINC1 to indicate that the SEZACMTX library will not be used.

2. Specify the dataset name of the SEZACMTX library when IBM TCP/IP functions are to be included in the client module.
SANSST Identifies the dataset name of the Sterling Software TCPaccess CILIB library. Select one of the following:

1. Specify the dataset name associated with DDDEF SANSINC1 to indicate that the CILIB library will not be used.
2. Specify the dataset name of the CILIB library when Sterling Software TCPaccess functions are to be included in the client module.

SANSSEE Identifies the dataset name of the Language Environment SCEELKED library. Select one of the following:

1. Specify the dataset name associated with DDDEF SANSINC1 to indicate that the SCEELKED library will not be used.
2. Specify the dataset name of the SCEELKED library when IBM TCP/IP functions or Sterling Software TCPaccess functions are to be included in the client module.

- Include in the DDDEFS statements the UNIT and VOLUME keywords and parameters if needed.
- Change lower case names to installation-defined UPPERCASE values.

Note: The DDDEFs above are used only to resolve external references during the link-edit of the client module using CALLLIBS. These data sets are not updated during the installation of Tivoli Storage Manager.

### 6.1.5 Sample Jobs

The following sample installation jobs are provided as part of the product to help you install Tivoli Storage Manager:

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job Type</th>
<th>Description</th>
<th>RELFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANRRECEV</td>
<td>RECEIVE</td>
<td>Sample RECEIVE job</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRALLOC</td>
<td>ALLOCATE</td>
<td>Sample job to allocate target and distribution</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRDDDEF</td>
<td>DDDEF</td>
<td>Sample job to define SMP/E DDDEFs</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRAPPCK</td>
<td>APPLY CHECK</td>
<td>Sample APPLY CHECK job</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRAPPLY</td>
<td>APPLY</td>
<td>Sample APPLY job</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRACCCK</td>
<td>ACCEPT CHECK</td>
<td>Sample ACCEPT CHECK job</td>
<td>IBM.HDN5510.F2</td>
</tr>
<tr>
<td>ANRACCEP</td>
<td>ACCEPT</td>
<td>Sample ACCEPT job</td>
<td>IBM.HDN5510.F2</td>
</tr>
</tbody>
</table>

You may copy the jobs from the tape or product files by submitting the job below. Use either the //TAPEIN or the //FILEIN DD statement, depending on your distribution medium, and comment out or
delete the other statement. Add a job card and change the lowercase parameters to uppercase values to
meet your site's requirements before submitting.

```
//STEP1 EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=* 
//TAPEIN DD DSN=IBM.HDN5510.F2,UNIT=tunit,VOL=SER=DN5510,
// LABEL=(3,SL),DISP=(OLD,KEEP)
//FILEIN DD DSN=IBM.HDN5510.F2,UNIT=SYSALLDA,DISP=SHR,
// VOL=SER=filevol 
//OUT DD DSNNAME=jcl-library-name, 
// DISP=(NEW,CATLG,DELETE),
// VOL=SER=dasdvol,UNIT=SYSALLDA,
// SPACE=(TRK,(120,10,5))
//SYSUT3 DD UNIT=SYSALLDA,SPACE=(CYL,(1,1))
//SYSIN DD *
// COPY INDD=xxxxIN,OUTDD=OUT
/*
```

where `tunit` is the unit value matching the product tape, `filevol` is the volume serial of the DASD device
where the downloaded files reside, `jcl-library-name` is the name of the output data set where the sample
jobs will be stored, `dasdvol` is the volume serial of the DASD device where the output data set will reside
and `xxxxIN` on the SYSIN DD to either TAPEIN or FILEIN depending on your input DD statement.

You can also access the sample installation jobs by performing an SMP/E RECEIVE and then copying the
jobs from the SMPTLIBs to a work data set for editing and submission. See Figure 14 on page 20 to find
the appropriate SMPTLIB data set.

6.1.6 Perform SMP/E RECEIVE

Edit and submit sample job ANRRECEV to perform the SMP/E RECEIVE for Tivoli Storage Manager.
Consult the instructions in the sample job for more information.

**Note:** If you obtained Tivoli Storage Manager as part of a CBPDO, you can use the RCVPDO job found
in the CBPDO RIMLIB data set to RECEIVE the Tivoli Storage Manager FMIDs as well as any service,
HOLDDATA, or preventive service planning (PSP) information included on the CBPDO tape. For more
information, refer to the documentation included with the CBPDO.

**Expected Return Codes and Messages from RECEIVE:**

Return code 0 is expected from this job.

Return code 4 or greater may result when other error conditions are detected. Review the SMP/E
output to determine the cause of the error.
6.1.7 Allocate SMP/E Target and Distribution Libraries

Edit and submit sample job ANRALLOC to allocate the SMP/E target and distribution libraries for Tivoli Storage Manager. Consult the instructions in the sample job for more information.

Expected Return Codes and Messages:

Return code 0 is expected from this job.

6.1.8 Create DDDEF Entries

Edit and submit sample job ANRDDDEF to create DDDEF entries for the SMP/E target and distribution libraries for Tivoli Storage Manager. Consult the instructions in section "SMP/E CALLLIBS Processing" and in the sample job for more information.

Expected Return Codes and Messages from DDDEFS:

Return code 0 will result when all DDDEFs were added successfully to the target zone.

Return code 8 will result when one or more DDDEFs being added already exist in the target zone. Review the existing DDDEFs to determine if they will meet your needs.

6.1.9 Perform SMP/E APPLY CHECK

Edit and submit the sample job ANRAPPCK to perform SMP/E APPLY CHECK for Tivoli Storage Manager. Consult the instructions in the sample jobs for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do not bypass the following on the APPLY CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of ERRORS and not of WARNINGS (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).

Note: The GROUPEXTEND operand indicates that SMP/E apply all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from APPLY CHECK:

Return code 0 is expected from this job.

Return code 4 or greater may result when other error conditions are detected. Review the SMP/E output to determine the cause of the error.
6.1.10 Perform SMP/E APPLY

Edit and submit sample job ANRAPPLY to perform an SMP/E APPLY for Tivoli Storage Manager. Consult the instructions in the sample job for more information.

Note: The GROUPEXTEND operand indicates that SMP/E apply all requisite SYSMODs. The requisite SYSMODs might be applicable to other functions.

Note: APPLY link-edits the client module ANSADM into the SMPLTS dataset and then link-edits ANSADM into the target library. This is the result of the CALLLIBS function. All other modules are link-edited directly to a target library.

Expected Return Codes and Messages from APPLY:

Return code 0 is expected from the link-edit of the server module ANRSERV (alias DSMSERV) into the target library and from the link-edit of the client module ANSADM into the target library.

Return code 4 is expected from the link-edit of the client module (ANSADM) to the SMPLTS dataset. This will result from “unresolved external references” (message IEW2454W) and can be ignored.

Return code 0 is expected from the link-edit of ANSSSTUB to the AANSLOAD dataset.

Return code 4 is expected from the link-edit of ANSTCPIN and ANSICSIN to the AANSLOAD dataset. This will result from “unresolved external references” (message IEW2454W) and can be ignored. Also, the following SMP/E messages will result and can be ignored:

GIM23903W LINK-EDIT PROCESSING FOR SYSMOD JDN5511 WAS SUCCESSFUL FOR MODULE ANSTCPIN IN LMOD ANSTCPIN IN THE SANSINC2 LIBRARY. THE RETURN CODE WAS 04.
GIM23903W LINK-EDIT PROCESSING FOR SYSMOD JDN5511 WAS SUCCESSFUL FOR MODULE ANSICSIN IN LMOD ANSICSIN IN THE SANSINC3 LIBRARY. THE RETURN CODE WAS 04.

Note: GIM23913W may appear in place of GIM23903W.

Return code 4 or greater may result when other error conditions are detected. Review the SMP/E output to determine the cause of the error.

6.1.11 Perform SMP/E ACCEPT CHECK

Edit and submit the sample job ANRACCCK to perform SMP/E ACCEPT CHECK for Tivoli Storage Manager. Consult the instructions in the sample job for more information.

To receive the full benefit of the SMP/E Causer SYSMOD Summary Report, do not bypass the following on the ACCEPT CHECK: PRE, ID, REQ, and IFREQ. This is because the SMP/E root cause analysis identifies the cause only of ERRORS and not of WARNINGS (SYSMODs that are bypassed are treated as warnings, not errors, by SMP/E).
Note: The GROUPEXTEND operand indicates that SMP/E accept all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from ACCEPT CHECK:

Return code 0 is expected from this job.

Return code 4 or greater may result when other error conditions are detected. Review the SMP/E output to determine the cause of the error.

6.1.12 Perform SMP/E ACCEPT

Edit and submit sample job ANRACCEP to perform an SMP/E ACCEPT CHECK for Tivoli Storage Manager. Consult the instructions in the sample job for more information.

Before using SMP/E to load new distribution libraries, it is recommended that you set the ACCJCLIN indicator in the distribution zone. This will cause entries produced from JCLIN to be saved in the distribution zone whenever a SYSMOD containing inline JCLIN is ACCEPTed. For more information on the ACCJCLIN indicator, see the description of inline JCLIN in the SMP/E manuals.

Note: The GROUPEXTEND operand indicates that SMP/E accept all requisite SYSMODs. The requisite SYSMODS might be applicable to other functions.

Expected Return Codes and Messages from ACCEPT:

Return code 0 is expected from this job.

Return code 4 or greater may result when other error conditions are detected. Review the SMP/E output to determine the cause of the error.

6.1.13 Perform SMP/E REPORT CALLLIBS

This optional step will create a link-edit job for the client module. The resulting job can then be used to link-edit the client module if one of the SYSLIB libraries has been updated. The SYSLIB libraries are defined as follows:

```
//SYSLIB DD DSN=SYS1.SANSINCL,DISP=SHR
// DD DSN=TCPIP.SANSTCP,DISP=SHR TCP/IP SEZACMTX
// DD DSN=TCPAC.SANSSST,DISP=SHR TCPaccess CILIB
// DD DSN=LEMVS.SANSSCEE,DISP=SHR LE SCEELKED
```

Edit and submit the sample job ANRRPTCL to perform SMP/E REPORT CALLLIBS for Tivoli Storage Manager. Consult the instructions in the sample job for more information.

The output from the ANRRPTCL job will be similar to the following:
The job was generated from the REPORT CALLLIBS command for target zone TSMTZN on 01.321 at 10.30.30.

**Installation Instructions**

In columns 73-80 of the DD statements, you will find an identifier that is similar to SMP/E DDDEF definitions. These identifiers will be used within parenthesis in the text that follows to refer to the appropriate DD statement.

The job can be run as created without modification. However, you can modify the job as necessary before running it.
The job must be modified when a new TCP/IP SEZACMTX library (SANSTCP) or a new Sterling Software TCPaccess CILIB library (SANSSSST) is to be used. Also, the job must be modified when a new Language Environment SCEELKED library (SANSSCEE) will be used.

The job must also be modified when the DDDEFs were defined such that neither the TCP/IP functions nor the Sterling Software TCPaccess functions were included at installation of Tivoli Storage Manager. The following explains how to modify the DD statements that are part of the SYSLIB dname. The identifier found in columns 73-80 will be used to refer to the DD statement that must be changed.

**SANSINCL** The dataset name must be set to one of the following:

- `hlq.SANSINC1` when neither TCP/IP functions nor Sterling Software TCPaccess functions are to be included.
- `hlq.SANSINC2` when the TCP/IP functions must be included.
- `hlq.SANSINC3` when the Sterling Software TCPaccess functions must be included.
- `hlq` is the high-level qualifier for the datasets allocated for Tivoli Storage Manager.

**SANSTCP** The dataset name must be set to one of the following:

- `tcphlq.SEZACMTX` when the TCP/IP functions will be included.
- `hlq.SANSINC1` when the Sterling Software TCPaccess will be included.
- `hlq` is the high-level qualifier for the datasets allocated for Tivoli Storage Manager.
- `tcphlq` is the high-level qualifier for the datasets allocated for IBM TCP/IP.

**SANSSSST** The dataset name must be set to one of the following:

- `ssthlq.CILIB` when the Sterling Software TCPaccess functions will be included.
- `hlq.SANSINC1` when the IBM TCP/IP functions will be included.
- `hlq` is the high-level qualifier for the datasets allocated for Tivoli Storage Manager.
- `ssthlq` is the high-level qualifier for the datasets allocated for Sterling Software TCPaccess.

**SANSSCEE** The dataset name must be the following:

- `ceehlq.SCEELKED` (Language Environment link library).
- `ceehlq` is the high-level qualifier for the datasets allocated for Language Environment.

The dataset name for the SYSLMOD DD statement (LINKLIB) can be changed to meet your needs (for example, to place the client module ANSADM (alias DSMADMC) in a different library).

The dataset name for the SMPLTS DD statement (SMPLTS) should be changed only when instructed to do so.

The remaining DD statements can be modified to meet your needs.

Return code 4 will result from the link-edit job and can be ignored.
Return code greater than 4 indicates an error and must be resolved before continuing.

6.2 Activating Tivoli Storage Manager

The publication *Tivoli Storage Manager for OS/390 and z/OS Quick Start*, GC32-0777 contains the step-by-step procedures to activate the functions of Tivoli Storage Manager.
Contacting Customer Support

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

- Submit a problem management record (PMR) electronically at IBMSERV/IBMLINK.
- Submit a problem management record (PMR) electronically from our Web site at http://www.tivoli.com/support.
- Send e-mail to support@tivoli.com.

Customers in the United States can also call 1-800-TIVOLI8 (1-800-848-6548).

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

You can also review the Customer Support Handbook, which is available on our Web site at http://www.tivoli.com/support/handbook/.

When you contact Tivoli 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 Customer Support Handbook); frequently asked questions (FAQs); and documentation for all Tivoli 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.

You can order documentation by e-mail at swdist@tivoli.com. Please provide the publication number, part number, or order number of the desired document. Alternatively, you can provide the document title, version number, and date of publication.

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 contact us in one of the following ways:

- Send e-mail to pubs@tivoli.com.