

Global.Name Registry

TSM Documentation

Finn Henningsen - Sagitta Performance Systems

Version 1.0

23th April 2002



Review History

| Version | Date | Description |
|---------|------------|--------------|
| 1.0 | 23/04/2002 | Initial work |

Reviewers

| Name | Company | E-mail |
|-----------------|-----------------------------|--------------------------------|
| Finn Henningsen | Sagitta Performance Systems | Finn_Henningsen@sagitta-ps.com |
| Neil Riches | Sagitta Performance Systems | Neil_Riches@sagitta-ps.com |
| Lee Varnham | Global.Name Registry | Lee@Varnham.name |

Table of Content

| | |
|---|-------------------------------------|
| Introduction | 4 |
| TSM Implementation | 5 |
| Backup overview | 5 |
| Domains and Management Classes | 6 |
| Storage Pools | 8 |
| Schedules | 8 |
| Client Schedules | 9 |
| Administrative Schedules | 9 |
| Procedures for taking tapes off-site | 10 |
| TSM Client Configuration | Error! Bookmark not defined. |
| Appendix A: TSM Server Setup | Error! Bookmark not defined. |
| Appendix B: TSM Server Scripts | Error! Bookmark not defined. |
| Appendix C: Software versions installed | Error! Bookmark not defined. |
| Appendix D: Scheduler start-up script..... | Error! Bookmark not defined. |

Introduction

This document describes the Tivoli Storage Manager (TSM) implementation at Global.Name Registry (GNR).

The TSM solution is based on a Network Storage Manager package sold by IBM. The solution is comprised of an IBM H70 running AIX 4.3.3 and a SCSI attached 3583 library with two LTO drives. The IBM hardware was delivered with AIX 4.3.3 and TSM 4.1.3.0 pre-installed. Sagitta carried out the physical installation and implemented the configuration.

TSM Implementation

Tivoli Storage Manager has been employed to provide automated backup and recovery for the Global.Name Registry (GNR) Linux environment. All TSM clients serviced by the TSM server are doing LAN based backups and restores. All backups are flatfile backups.

A detailed listing of all configuration information completed on the TSM server can be found at appendix A and appendix B.

Backup overview

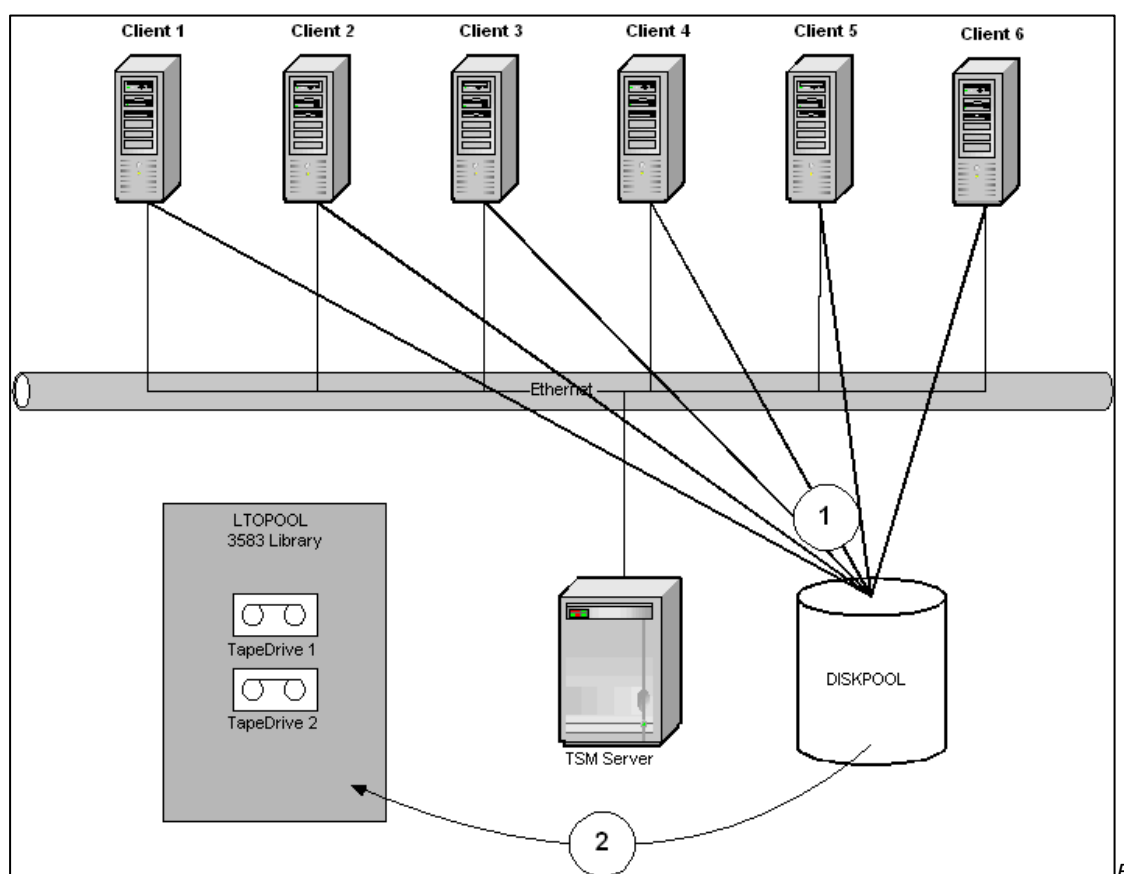


Figure 1: Diagram of the dataflow

During a backup cycle, the TSM server based on its predefined schedules will poll the TSM client to begin its backup. The characteristics of the backup are defined on the server, hence the server tells the client what should be backed up. The start of each backup will depend on the availability of the clients and balancing of the backup load on the TSM server.

Referring to the number 1 on Figure 1, user data (flatfiles) clients will backup across the LAN to the disk storage pool on the TSM server. Once backups has

completed, data is migrated from disk to tape by the TSM server (number 2). Once the migration has completed, all data is copied from tapes in the primary storage pool to tapes in the copy storage pool. This is done as part of the administrative tasks performed every day (see later section). Thus, two copies of all backed up data exist.

Domains and Management Classes

One TSM domain is defined on the TSM server. This domain contains one policysset with one management class. See figure 2 for an overview.

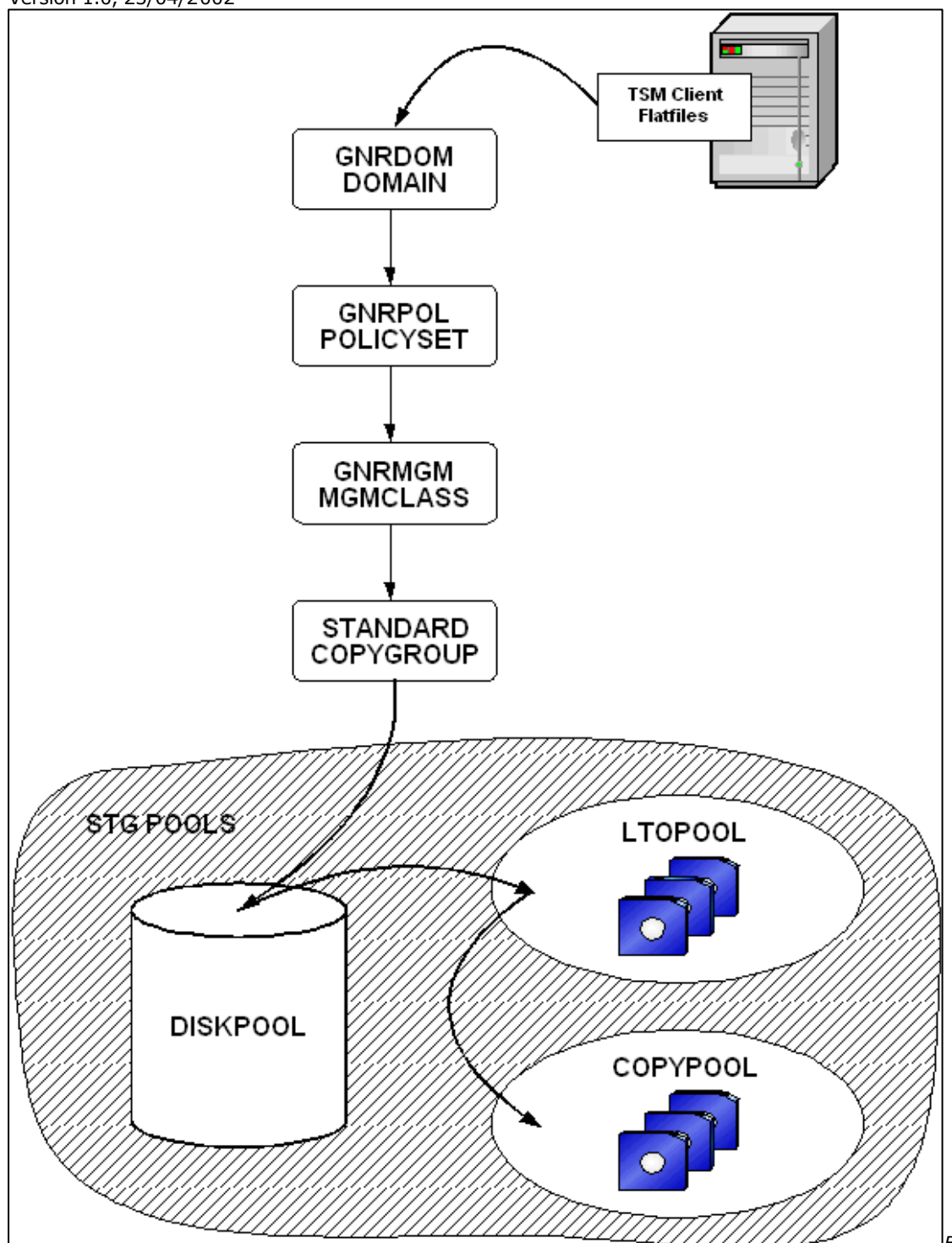


Figure 2: Domain, Management Classes, Copygroup and storage pool structure.

All clients are defined to the GNRDOM TSM domain. All backups end up in the DISKPOOL disk storage pool, which effectively means that all backups are backed up to disk. As the disk storage pool fills up, data is migrated to the LTOPPOOL tape storage pool. Later all data in the LTOPPOOL is copied to the COPYPOOL tape storage pool. Tapes belonging to the COPYPOOL should be taken off-site on a weekly basis.

The properties for the standard copy group in the default management class of the GNRDOM domain are:

- Versions exist: 3
- Versions deleted: 2
- Retain extra version: 180
- Retain only version: No Limit

Storage Pools

Storage pools are the management units that TSM uses to manage the data. Different types of data are assigned to different Storage pools, for easier collective management. There are two types of storage pools:

- Primary storage pool. Main storage pools are where the data is held and managed. A primary storage pool can be on either disk or tape.
- Copy storage pool. A storage pool, which is a complete duplicate of a primary storage pool. You can have a one to one relationship or a many to one relationship

The TSM client systems are backing up all flatfile data to primary disk storage pools defined on the TSM server and later migrated to tape. The primary storage pools are backed up to copy storage pools. Copying from primary to copy storage pools is done as part of the daily administrative tasks (see next section).

Schedules

A number of schedules are running on the TSM server. These are either client schedules that deal with client data backups or administrative schedules that perform several administrative tasks on the TSM server, e.g. TSM DB backup and copying of data from primary storage pools to copy storage pools.

Client Schedules

One client schedule is currently running on the TSM server. That is

- **DAILY_INCR**, runs every day at 01:00. The schedule performs an incremental backup of all associated nodes.

Administrative Schedules

Three administrative schedules are running on the TSM server. They are

- **start_admin_tasks**, runs every day at 03:00. The schedule runs the TSM server script **start_admin_tasks**. This script verifies that all client backups have completed. Once that has happened, the **start_admin_tasks** script kicks off the **do_admin_tasks** script, which in turns does the migration from disk pool to tape pool, backs up the primary storage pool to the copy storage pool, backs up the TSM DB backup and expire inventory. A printout of all TSM server scripts can be found at appendix B.
- **run_copypool_space_reclaim**, runs every Saturday at 07:00. The schedule runs the TSM server script **do_space_reclamation** with the argument copypool (**do_space_reclamation** is a generic script, that will do space reclamation on the storage pool named by the argument passed to the script).
- **run_ltopool_space_reclaim**, runs every Saturday at 11:00. The schedule runs the TSM server script **do_space_reclamation** with the argument ltopool.

Detail of all TSM server scripts can be found at appendix B

Procedures for taking tapes off-site

GNR has not purchased DRM for TSM. For that reason, all procedures for taking tape to an off-site location and bringing tapes back from the off-site location must be handled manually. The scripts implemented on the TSM server will handle all preparation (TSM database backups and creation of copy storage pool volumes). But it is the TSM administrator responsibility to identify the volumes that must be taken off-site and update the volumes access value according to their location. It is also the TSM administrator responsibility to trace all off-site volumes, including TSM database backups. An unsupported script has been provided to help identify volumes that should go off-site and volumes that should be returned to site, but this script only works for data volumes (and only if volume access is updated correctly as tapes are taken in and out of the library) and does not work for tapes containing TSM database backups.

For DR purposes, a copy of the devconfig.out and volhist.out files must also go off-site along with the TSM database backup. These two files are only a few kilobytes each, therefore the easiest way of taking the files off-site is to mail them to an off-site location or print them at a remote printer.