

# **TSM PROJECTS**

## **Project 1:**

### **Scope of the Project:**

The scope of this project involves auditing the existing setup comprising of TDP for ERP version 3.3.10 (mysap.com on oracle 9i), in a LANFREE (SAN) environment with storage agent version 5.2.2.5, TSM server version 5.2.2.5, IBM 3583 Library for slow backup performance and to provide possible suggestions for better TSM/TDP backup performance.

Troubleshoot the non-operational OFFLINE and ONLINE SAP backup process in the existing setup.

### **Environment details: -**

Customer is having an existing SAP setup with PRODUCTION, DEVELOPMENT, and QUALITY servers in the environment.

Production server is having MYSAP.COM release 4.7, with database size of 640GB is residing on IBM 6M2 server running oracle 9.2.0.5.0 and sharing storage on IBM ESS model F 20.

TSM server version 5.2.2.5 is installed on IBM H70 server, which already exists.

The operating systems loaded are AIX 5.2 64 bit on all the systems.

The setup has an IBM3583 Library with 3 SCSI drives and 1 fiber channel drive connected to SAN switch IBM 2105. Only the fiber channel drive is used for the SAP backup.

### **Objectives: -**

To analyze the configuration of TSM server, IBM 3583 Library, SAN agent & TDP for SAP R/3 in the present setup.

To identify the causes in TSM server, IBM 3583 Library, SAN agent & TDP for SAP R/3 configuration, that attributes to slow backup performance.

To analyze and rectify the root cause for non-operational Offline backup of SAP through TDP for R/3.

To provide possible suggestions for better performance.

### **Solution: -**

Analyzed the TSM ACTLOG and TDP for R/3 backup logs and identified the root cause behind the slow backup performance.

Analyzed whole TSM and TDP configuration and tuned the parameters according to best practices.

Analyzed the Current library configuration and sharing process and tested it for LANFREE functionality.

Tested the SAP backup, analyzed the system load, network activity so as to find the bottlenecks which causes slow down in performance.

Analyzed their day to day operations guide and suggested some changes in the operational procedure for optimal usage.

Configured the TSM server for offline back up, configured SAP configuration file and TDP for R/3 configuration file for OFFLINE backup process.

Drafted the final audit report highlighting the issues found and suggestions on to how to maintain the existing setup for optimal performance.

## **Project 2:**

### **Scope of the Project:**

The scope of this project involves Installation & configuration of TSM Server 5.2, TSM BA Client 5.2 and TSM Storage Agent 5.2

Installation & configuration of TSM for mail 5.2 (Lotus domino), TSM for Application Server (WAS) 5.2, IBM DB2 online database backup and LDAP binary backup.

Conducting onsite acceptance test for backup and restore functionality.

Documentation including day-to-day operations procedure backup & restore procedures.

To provide day-to-day TSM server maintenance activities training.

To Provide IBM TSM server 5.2 five day classroom training as per IBM course module.

### **Environment details:**

The existing setup comprises one IBM P-Series 670 Server with 8 LPAR'S configured all running AIX 5.2 LPAR2 (200GB data), LPAR5 (100GB data) servers are running Lotus domino mail servers running 3 instances each.

LPAR6 (10GB data) server is running web application server running 2 instances, IBM HTTP server and also LDAP server (10GB data).

LPAR7 server is running IBM DB2 database running a single instance.

TSM Server needs to be installed on an IBM P-Series 615 Server running AIX5.2

The TSM server for backup through SAN will use the IBM 3583 LTO Tape Library with 3-FC Drives.

### **Backup policy: -**

DB2 backup: -

Daily online full database backup from Monday to Friday. The number of versions will be 20 and retention period will be 26 days.

Weekly online full database backup of Saturday. The number of versions will be 8 & retention period of 55 days.

Monthly full Database backup on the first of every month. Number of versions will be 12 & retention period will be 364 days.

Every two hours Transaction log backup (allows you to recover the DB2 Database up to previous two hours state in case DB2 Database crashes) to disk storage pool and will be migrated to tape storage pool as mentioned in the TSM Backup Schedules.

Backup of DB2 binaries once in a month.

Lotus Domino:

Daily online full backup from Monday to Friday. The number of versions will be 20 and retention period will be 26 days.

Weekly online full backup of Saturday. The number of versions will be 8 & retention period of 55 days.

Monthly full backup on the first of every month. Number of versions will be 12 & retention period will be 364 days.

Backup of Lotus Domino binaries once in a month.

Web Sphere:

Daily online full backup from Monday to Friday. The number of versions will be 20 and retention period will be 26 days.

Weekly online full backup of Saturday. The number of versions will be 8 & retention period of 55 days.

Monthly full backup on the first of every month. Number of versions will be 12 & retention period will be 364 days.  
Backup of WAS binaries once in a month.

**LDAP:**

Backup of LPAR6 (since it is a file level backup, the customer should shutdown the application during the backup period)

Daily file level backup from Monday to Friday. The number of versions will be 20 and retention period will be 26 days.

Weekly file level backup of Saturday. The number of versions will be 8 & retention period of 55 days.

Monthly file level backup on the first of every month. Number of versions will be 12 & retention period will be 364 days.

Backup of LDAP binaries once in a month.

**Solution: -**

The entire Lotus Domino Servers backup will go to three tapes (assuming total data does not exceed 600GB).

According to the customer requirement the DB2, Web sphere, LDAP Servers data should go to one tape (it should go to next tape only when the first tape is full). In this case the schedules for DB2, Web sphere, LDAP Servers have to run serially and it will affect the backup window, as we will be using only one drive.

TSM Database backup will be taken to one tape and needs to be removed from DDS-4 tape drive attached to p615 server on daily basis.

Tapes labeled and checked in as private to segregate Daily, Monthly and weekly pool.

Template to create an ad-hoc policy that has a longer retention Period provided.

Backup scripts created so that backup will not happen on holidays.

### **Project 3:**

#### **Scope of the project: -**

To implement a 2nd "copy pool" using Tivoli Storage Manager (TSM) on the HP Jukebox of the existing DB2. This implementation is to provide off-site back-up capability on the HP Jukebox of the eArchive system in the event of a disaster.

To provide training on handling the offsite volumes.

This solution will provide a powerful media management facility that creates a new Copy Storage Pool to backup all client data stored on Primary Storage Pool. The new Copy Storage Pool volume will be stored in an off-site location. If disaster occurred, the off-site volume can be returned from an off-site copy for possible recovery from media failures.

#### **Environment details:**

The existing setup consists of an eArchive server, where a few other servers will push report (text files) into the eArchive server's M drive. From here the reports will be processed by the DB2 On Demand system and then store the data into 2 directories called cache and cache1. The content of these 2 directories will be sent to the HP Jukebox for archive via the Tivoli Storage Manager (TSM) storage management system.

In TSM, the data is stored in a Primary Storage Pool and a Copy Pool. They will be deleted after 7 years. The solution of creating a 2nd Copy Pool is to enable off-site backup capability on the HP Jukebox of the DB2 On Demand system. The solution will be using Re-writable ODs so that they can be reused.

#### **Backup policy: -**

Every Monday the eligible offsite volumes will be sent offsite.

Every Monday the TSM database volumes will be sent offsite along with volhist.out, devcng.out files.

These volumes will be reused after a week's time.

#### **Solution:**

Configured 2nd storage pool to take backup of primary storage pools on disk & HPJukebox Configured schedules for backup of storagepool, TSMDB backup, backup volhist, backup devconfig.

One backup of TSMDB will be kept on disk & one copy on tape volume.

Reclamation for copypool2 is not required since the off-site strategy is to delete the offsite volumes and not waiting for it to expire. The deleted off-site volume can be reused.

Procedure & training on how to handle the offsite backup volumes provided.

Procedure on TSM day to day activities provided.

## **Project 4 :**

### **Scope of the Project:**

#### **Daily backup:**

- File level incremental, Databases full with offsite copy running from Monday to Friday for SAP and DOMINO servers.
- Onsite copy going to tapepooldaily and offsite copy to tapepooldailyoff.
- All onsite as well as offsite volumes of these pools can be reused after 1 month (30 days) of checking-out.

#### **Weekly backup:**

- File level full, Databases full offline in case of SAP with offsite copy running on Saturday.
- Onsite copy going to tapepooldaily and offsite copy to tapepooldailyoff.
- All onsite as well as offsite volumes of these pools can be reused after 1 month (30 days) of checking-out.

#### **Monthly backup:**

- File level full, database full (offline for SAP) with offsite copy, there will be no onsite copy for the monthly backups.
  - Reuse period for monthly backups will be 1 year (365 days) from the checkout.
- All backups will go in tapepoolmonth and will be send offsite with access=readwrite.

### **Environment Details:**

- The existing setup consists of 16 servers running Windows 2000/2003 advanced server.
- Sap 4.7 on oracle 9.2.0.4.0 with Brbackup 6.20(build 133) utility on SAP Production, Development and Quality server Architecture.
- A cluster of Domino servers without automatic takeover and transaction logging disabled.
- MS-SQL server on remote site on WAN connectivity.
- Print and File server and other General-purpose servers.
- SAP servers and Domino servers were connected to TSM Server on Gig Bit Network.
- TSM Server ver 5.2.4 with reporting feature, TDP for R/3 5.3, Backup Archive Clients Ver 5.3,TDP for DOMINO and TDP for SQL 5.3.
- IBM 3582L23 SCSI Library connected on U160 external connector of TSM Server.

### **Solution:**

- Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a solution design document to achieve their specifications.
- Installed TSM Server, Configured 3882 Library.
- Installed TDP for SAP R/3,TDP for Domino, and TDP for MS-SQL, Backup-Archive client.
- Configured Storage pools on disk and on tape. The idea was to keep the file level backup on disk pools and DB backups (SAP+DOMINO) directly to tape. All logs (SAP+SQL) and sqlmetadata were configured to be on disk pool and later on migrated to tape.
- To meet the requirement of daily offsite copy of the backed up data a copy pool was configured and backup stg was scheduled to happen daily.
- Created Client and admin schedules in keeping view of the backup window and the throughput of the system.
- Created admin schedules for backing up the storage pools on daily basis. Also implemented a setup to save the important configuration file i.e. volhist.out, devconfig.out,dmserv.opt, dmserv.dsm.

- Created the necessary documents and trained the customer personnel up to the level so that they are well comfortable with the Implementation and day to day activities to be performed on Tsm Server.
- Configured the TSM Reporting feature and enabled some mail id's to get the TSM Server status mail on daily basis.
- Demonstrated the Restore/ Recovery process of each of the products

## **Project 5:**

### **Scope of the Project:**

The scope of this project involves

1. Auditing the existing TSM setup having Ver 5.5 comprising of TDP for SQL version 5.5 in cluster environment, DB2 backup, TSM server version 5.5, and IBM 3494 Tape library for slow backup performance.
2. Installation and configuration of TDP for Exchange ver 5.5,
3. Upgrading existing B/A client to Ver 5.5 and
4. Provide possible recommendations / suggestions for better TSM backup performance.

### **.Environment details: -**

The existing setup comprises of

1. TSM server version 5.5 on AIX 5.3,
2. MS Sql server in cluster (active-passive) environment,
3. IBM 3494 Tape library having 4 TS1130 tape drives,
4. DB2 running on windows, Zlinux and AIX .

### **Solution: -**

1. Analyzed the TSM ACTLOG and backup logs, identified the root cause behind the slow backup performance.
2. Done performance tuning of TSM according to the best practices.
3. Installed and configured TDP for Exchange ver 5.5.
4. Analyzed Backup logs for failed/missed backup's schedules and fixed them.
5. Analyzed their day to day operations guide and suggested some changes in the Operational procedure for optimal usage.

## **Project 6:**

### **Scope of the Project:**

The scope of this project involves

1. Installation and configuration of Cristie bare metal recovery on 100 no. of windows boxes and
2. Audit existing LAN-FREE backup Performance.

### **.Environment details: -**

The existing setup comprises of

1. TSM server version 5.5 on AIX 5.3,
2. IBM TS 3310 Tape library having 6 tape drives.

### **Solution: -**

1. Installed and configured cristie bare metal on 100 no of windows systems and configured them with TSM.
2. Analyzed existing LAN-FREE configuration and taken test backups from Solaris and AIX nodes.
3. Prepared report based on the result of LAN-FREE backups taken from Solaris and AIX nodes and suggested solution to customer.

## **Project 7:**

**Customer: Tamkeen (Bahrain's labour Fund)**

### **Scope of the Project:**

The scope of this project involves

1. Adding additional backup policy for weekly, monthly and yearly backups.
2. Installation and configuration of Cristie bare metal recovery on 15 no. of windows boxes.

### **Environment details: -**

The existing setup comprises of

1. TSM server version 5.5 on AIX 5.3, MS Sql server, MS-Exchange,
2. 15 no. of critical user laptops,
3. IBM TS3310 library having 4 tape drives and,
4. One file server.

### **Solution: -**

1. Analyzed the backup needs of the client such as backup window, backup frequency, number of versions to be kept and storage pools size and then drafted a solution design document to achieve their specific requirements.
2. Added additional policy for weekly, monthly and yearly backups.
3. Created policy for cristie bare metal solution on TSM server.
4. Installed and configured cristie bare metal on all 15 laptops and configured with TSM.

## **Project 8:**

### **Scope of the Project:**

The scope of this project involves

1. Adding additional backup policy for weekly, monthly and yearly backups.
2. Installation and configuration of Cristie bare metal recovery on 10 no. of windows boxes.

### **Environment details: -**

The existing setup comprises of

1. TSM server version 5.5 on AIX 5.3, MS Sql server, MS-Exchange,
2. 10 no of critical user laptops,
3. IBM TS3310 library having 2 tape drives,

### **Solution: -**

1. Analyzed the backup needs of the client such as backup window, backup frequency, number of versions to be kept and storage pools size and then drafted a solution design document to achieve their specific requirements.
2. Added additional policy for weekly, monthly and yearly backups.
3. Created policy for cristie bare metal solution on TSM server.
4. Installed and configured cristie bare metal on all 10 laptops and configured with TSM.

## **Project 9:**

### **Scope of the Project:**

The scope of this project involves auditing existing 2 TSM setup at production site on windows and AIX. Understand customer requirement, plan and consolidate both TSM servers to one TSM Server.  
Planning of TSM setup for the DR site in DUBAI  
Installation and configuration of Storage Agent for LAN-Free backups.  
Configure DRM for Disaster recovery.  
Planning for offsite copies according to requirement

### **Environment details: -**

The existing setup comprises of 2 TSM server (both having ver 5.5) running on AIX 5.3 and windows 2003. MS Sql server 2000, MS-Exchange 2003, Oracle RAC 11G, DB2, File server, IBM TS3310 library having 4 tape drives, IBM 3584 tape library having 3 tape drives

### **Solution: -**

Done meeting with customer to understand their backup needs to prepare SOW and plan for additional hardware requirement both for Production and DR site.  
Audited existing TSM setup.  
Created policy document according to their backup requirement.  
Calculation of tape requirement for production and DR site.  
Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a design document for Production and DR site.  
Suggested bare metal environment for critical server.  
Planning for offsite backup copies.

## **Project 10:**

### **Scope of the Project:**

1. Restore TSM DB using TSM DB backup LTO tape on DR site.
2. Register all TSM nodes on TSM server.
3. Configure all TSM nodes (BA client and DB2 servers for LAN free)
4. Install TSM servers on two MS Cluster configured servers
5. To demonstrate restoration of data on DR site.

### **Environment details:**

#### **1.) PRODUCTION SITE:-**

(IBM xenon Intel servers model SYSTEM X3650)

- a.) Two TSM Servers: -Windows 2003 server with SP1 in clusters. 172.31.105.155 and 172.31.105.29 and cluster IP 172.31.104.125
- b.) Four database servers (db2 servers) on Linux REHL 4.0-2.6.9-34.EL,
- c.) Ten application servers on Linux REHL 4.0-2.6.9-34.EL,
- d.) Three reports servers on windows 2003 server with SP1
- e.) IBM 33614LX (2 LTO3 drives, 2 magazines \*18 slots +2 fix slots = 38 slots) Library.

#### **1.) DR SITE:-**

(IBM xenon Intel servers model SYSTEM X3650)

- a.) One TSM Server: -Windows 2003 SP1 in clusters.  
172.31.133.38
- b.) Three database servers (db2 servers) on Linux REHL 4.0-2.6.9-34.EL,
- c.) Eight application servers on Linux REHL 4.0-2.6.9-34.EL
- d.) Three reports servers on windows 2003 server with SP1
- e.) IBM 33614LX (2 LTO3 drives, 2 magazines \*18 slots +2 fix slots = 38 slots) Library.

## **Project 11:**

### **Scope of the Project:**

The scope of this project involves Installation & configuration of TSM Server 5.5, TSM BA Client 5.5 and TSM Storage Agent 5.5,  
Installation & configuration of TDP for ERP on Production, Development and Quality servers.  
Conducting onsite acceptance test for backup and restore functionality.  
Documentation including day-to-day operations procedure backup & restore procedures.  
To provide day-to-day TSM server maintenance activities training.

### **Environment details:**

The existing setup comprises one IBM P-Series 550 Server with 6 LPAR'S configured all running AIX 5.3  
SAP version ECC 6.0, Oracle 10g,  
IBM TS-3310 library with 2 LTO-4 drives.

### **Solution:**

- Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a solution design document to achieve their specifications.
- Installed TSM Server, Configured 3310 Library.
- Installed TDP for SAP R/3, Backup-Archive client.
- Installed and configured Storage Agent version 5.5 for LAN-free backup.
- Configured Storage pools on disk and on tape. The idea was to keep the file level backup on disk pools and DB backups (SAP) directly to tape. All logs (SAP) were configured to be on disk pool and later on migrated to tape.
- To meet the requirement of daily offsite copy of the backed up data a copy pool was configured and backup stg was scheduled to happen daily.
- Created Client and admin schedules in keeping view of the backup window and the throughput of the system.
- Created admin schedules for backing up the storage pools on daily basis. Also implemented a setup to save the critical configuration file i.e. volhist.out, devconfig.out.dsmserv.opt etc.
- Created the necessary documents and trained the customer personnel up to the level so that they are well comfortable with the Implementation and day to day activities to be performed on TSM Server.
- Configured the TSM Reporting feature and enabled some mail ids to get the TSM Server status mail on daily basis.

## **Project 12:**

### **Scope of the Project:**

The scope of this project involves Installation & configuration of TSM Server 5.5, TSM BA Client 5.5 and TSM Storage Agent 5.5,  
Installation & configuration of TDP for ERP on Production, Development and Quality servers.  
Conducting onsite acceptance test for backup and restore functionality.  
Documentation including day-to-day operations procedure backup & restore procedures.  
To provide day-to-day TSM server maintenance activities training.

### **Environment details:**

The existing setup consists of 8 servers running Windows 2003 Enterprise.  
IBM TS-3310 library with 2 LTO-4 drives.

### **Solution:**

- Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a solution design document to achieve their specifications.
- Installed TSM Server, Configured 3310 Library.
- Installed TDP for SAP R/3, Backup-Archive client.
- Installed and configured Storage Agent version 5.5 for LAN-free backup.
- Configured Storage pools on disk and on tape. The idea was to keep the file level backup on disk pools and DB backups (SAP) directly to tape. All logs (SAP) were configured to be on disk pool and later on migrated to tape.
- To meet the requirement of daily offsite copy of the backed up data a copy pool was configured and backup stg was scheduled to happen daily.
- Created Client and admin schedules in keeping view of the backup window and the throughput of the system.
- Created admin schedules for backing up the storage pools on daily basis. Also implemented a setup to save the critical configuration file i.e. volhist.out, devconfig.out, dsmserv.opt etc.
- Created the necessary documents and trained the customer personnel up to the level so that they are well comfortable with the Implementation and day to day activities to be performed on TSM Server.
- Configured the TSM Reporting feature and enabled some mail id's to get the TSM Server status mail on daily basis.

## **Project 13:**

### **Scope of the Project:**

#### **Phase-1**

The scope of this project involves Installation & configuration of TSM Server 5.3, TSM BA Client 5.3 and TSM Storage Agent 5.3,

Installation & configuration of TDP for ERP on Production, Development and Quality servers.

Installation & configuration of TDP for SQL.

Installation & configuration of TDP for Exchange.

Conducting onsite acceptance test for backup and restore functionality.

Documentation including day-to-day operations procedure backup & restore procedures.

To provide day-to-day TSM server maintenance activities training.

#### **Environment details:**

The existing setup consists of IBM P-Series servers and Intel Boxes.

IBM 3583 library with 2 drives.

#### **Solution:**

- Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a solution design document to achieve their specifications.
- Installed TSM Server, Configured IBM 3583 Library.
- Installed TDP for SAP R/3, Backup-Archive client.
- Installed TDP for SQL
- Installed TDP for Exchange.
- Installed and configured Storage Agent version 5.3 for LAN-free backup of R/3 production servers.
- Configured Storage pools on disk and on tape. The idea was to keep the file level backup, SQL server and Exchange server backup on disk pools and DB backups (SAP) directly to tape. All logs (SAP, SQL, Exchange) were configured to be on disk pool and later on migrated to tape.
- To meet the requirement of daily offsite copy of the backed up data a copy pool was Configured and backup stg was scheduled to happen daily.
- Created Client and admin schedules in keeping view of the backup window and the throughput of the system.
- Created admin schedules for backing up the storage pools on daily basis. Also implemented a setup to save the critical configuration file i.e. volhist.out, devconfig.out.dsmserv.opt etc.
- Created the necessary documents and trained the customer personnel up to the level so that they are well comfortable with the Implementation and day to day activities to be performed on TSM Server.
- Configured the TSM Reporting feature and enabled some mail id's to get the TSM Server status mail on daily basis.

#### **Phase-2**

The scope of this project involves testing and creating necessary document of restoration of R/3 Production server on development server.

**Solution:**

Restored R/3 production server backup on development server and documented steps involved in this process for future use.

## **Project 14:**

### **Scope of the Project:**

The scope of this project involves Installation & configuration of TSM Server 5.2 on IBM Netfinity NF 7100 having windows 2003. TSM BA Client 5.2.  
Installation & configuration of TDP for SQL.  
Installation & configuration of TDP for Exchange.  
Conducting onsite acceptance test for backup and restore functionality.  
Documentation including day-to-day operations procedure backup & restore procedures.  
To provide day-to-day TSM server maintenance activities training.

### **Environment details:**

The existing setup consists of 2 IBM Netfinity NF 7100, IBM 3581 Autoloader .

### **Solution:**

- Analyzed the backup needs of the client like backup window, backup frequency, number of versions to keep and storage pools and then drafted a solution design document to achieve their specifications.
- Installed TSM Server, Configured IBM 3581 Autoloader
- Installed and configured TDP for SQL
- Configured Storage pools on disk and on tape.
- To meet the requirement of daily offsite copy of the backed up data a copy pool was Configured and backup stg was scheduled to happen daily.
- Created Client and admin schedules in keeping view of the backup window and the Throughput of the system.
- Created admin schedules for backing up the storage pools on daily basis. Also implemented a setup to save the critical configuration file i.e. volhist.out, devconfig.out, dsmserv.opt etc.
- Created the necessary documents and trained the customer personnel up to the level so that they are well comfortable with the Implementation and day to day activities to be performed on TSM Server.