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1. Objective

- 1.1 To provide a guideline for backing up central computer systems (servers) and restore operations as quickly as possible with the latest and most up-to-date data available.

2. Scope

- 2.1 Procedures specified in this document apply to all servers and databases maintained by IT Department.
- 2.2 Backup and restoration of departmental and user data residing on individual PC's are not covered in this document.

3. Definitions

3.1 Onsite Safe Box

A fire resistant storage box in which backup tapes are secured before being sent to off-site storage.


3.2 Off-Site Backup Storage Centre

A storage facility to house the backup tapes which is located away from the operation centre.

4. Policy & Procedure

4.1 Backup Policy

- 4.1.1 Backups shall be made of all data files at a minimum once every 24 hours of normal business operation. This will be known as the daily backup.
- 4.1.2 At least one full database backup shall be made every week.
- 4.1.3 All backups made should be verified for data integrity after completion of the backup process.
- 4.1.4 All backup tapes must be labeled accordingly.
- 4.1.5 All backup tapes for the day should be stored in a safe box.

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- 4.1.6 This box will then be used to transfer the data media to an off-site storage facility on weekly basis.
- 4.1.7 Access to backup tapes during transport and storage shall be limited to authorized individuals.
- 4.1.8 All backup activities shall be recorded in the Server Backup log sheet.
- 4.1.9 Backup Tape Rotation
After a period of time, backup tapes begin to degrade and will eventually become unusable. A tape rotation strategy must be employed to ensure that the cost of ownership related to data cartridges are kept to a minimum. (Ref: Section 4.3)
- 4.1.10 Backup tapes must be randomly tested to ensure data availability and integrity on half yearly basis.
- 4.1.11 All retired backup tapes should be disposed accordingly either by way of degaussing or destroyed physically or any other means suitable.
- 4.1.12 Any failed data backup will be done manually the next business day.

4.2 Backup Strategy

GFS (grandfather, father, son) is a tape rotation strategy that simplifies tape handling by organizing rotation into daily, weekly, and monthly backup tapes.

The GFS tape rotation strategy provides several benefits:

- It protects data with a minimum number of tapes (normally, only one or two backup sets are required to restore a file server), rotating some tapes and archiving others, so it is easy to restore one file or an entire file server.
- It reduces wear and tear on tapes and tape heads.
- It provides a systematic approach to tape storage that ensures the highest possible protection for data and gives an easy way to locate stored files. This makes restoring directories and volumes fast and easy.

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The GFS tape rotation strategy is based on a 7-day schedule (Sunday through Saturday), in which, at least one full backup each week is created. The rest of that week's backups can be differential (files that have changed since the last full backup).

In GFS terminology, the DAILY backup is the son and the FULL WEEKLY backup is the father. The last full backup of each month is considered the MONTHLY backup. In GFS terminology, it is the grandfather.

To meet statutory requirements (data retention), at each year-end, the last monthly backup (full backup) is archived as a YEARLY backup. The YEARLY backup is always permanent and should not be reused.


4.3.1 Backup Tape Rotation

4.3.1 Daily Backup Tape

Daily backup tapes are reused after a 2-week cycle.

4.3.2 Yearly Backup Tape


Yearly backup tapes are stored off-site permanently and minimally should meet statutory requirements of at least 7 years.

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4.4 Backup Schedule


SUN	MON	TUES	WED	THUR	FRI	SAT
1	2	3	4	5	6	7
Daily	Daily	Daily	Daily	Daily	Daily & WK(a)	WK(b)
					BS1	BS 2
8	9	10	11	12	13	14
Daily	Daily	Daily	Daily	Daily	Daily & WK(a)	WK(b)
					BS3	BS4
15	16	17	18	19	20	21
Daily	Daily	Daily	Daily	Daily	Daily & WK(a)	WK(b)
					BS5	BS6
22	23	24	25	26	27	28
Daily	Daily	Daily	Daily	Daily	Daily & WK(a)	WK(b)
					BS7	BS 8

- BS - Backup Set
 Daily - Daily Backup
 WK (a) - Weekly Backup for server that is not in HP Data Protector
 WK (b) - Weekly backup for server that is in HP Data Protector


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4.5 Backup Procedures

<u>Item</u>		<u>Description / Action</u>	<u>Responsibility</u>
4.5.1		Daily Tape Backup	System Administrator
	4.5.1.1	Create 1 set of backup tapes and label accordingly.	
	4.5.1.2	Perform daily backup operations on all required systems and databases. Start Backup Time: immediately after 5.30pm	
	4.5.1.3	Verify that backup has been completed satisfactorily.	
	4.5.1.4	Record backup activity in the Server backup log sheet.	
	4.5.1.5	Place the backup tapes in safe box.	
4.5.2		Weekly Tape Backup	

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<u>Item</u>		<u>Description / Action</u>	<u>Responsibility</u>
	4.5.2.1	Create 1 set of backup tapes and label accordingly.	System Administrator
	4.5.2.2	Perform weekly backup operations on all required systems and databases. Start Backup Time: Every Saturdays at 6pm onward	
	4.5.2.3	Verify that backup has been completed satisfactorily.	
	4.5.2.4	Record backup activity in the Server Backup log sheet.	
	4.5.2.5	Place the backup tapes in safe box for off-site delivery.	
4.5.3		Off-site Tape Management	
		Retrieve backup tapes from safe box and	IT Technician /

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<u>Item</u>		<u>Description / Action</u>	<u>Responsibility</u>
	4.5.3.1	complete the Onsite / Offsite Backup Tape Form [Appendix 16].	System Administrator
4.5.4		Restoration of Backup Data	
	4.5.4.1	Request of data restoration <ul style="list-style-type: none"> User request to retrieve missing data. Fill up "Data Recovery Requisition Form" [Appendix 17] and approved by HOD. 	User
	4.5.4.2	Upon receipt "Data Recovery Requisition Form" <ul style="list-style-type: none"> Retrieve the missing data from the backup storage. 	System Administrator
	4.5.4.3	Perform restoration on each required system and verify data after restoration.	
	4.5.4.4	User will require to acknowledge and acceptance of restored files	User