

BACKUP AND RECOVERY ROUTINES

Refer to the System Availability Schedule in section 6.16 of the FM Unit Procedures (QF72)

The backup administrator is responsible for ensuring that the backups are being carried out as per

- 1.0 Responsibility and Cover
- 2.0 Virus Detection Routines
- 3.0 Daily Differential DAT backups
- 4.0 Weekly DAT Backups
- 5.0 Weekly System Disk Re-Builds
- 6.0 Backup Checks
- 7.0 Tape Storage
- 8.0 Recovery

Pre-Amble

This document details backup and restore routines for the 2 NT domain servers, henceforth referred to as the 'servers'. The system owner is Ian Maskery, LG IT manager.

Both of the servers shall be backed up daily to DAT tape. Three types of backup routines shall be utilised.

- The daily backup (Mon, Tue, Wed, Thu) will consist of a differential backup i.e. all data and software created / modified since the last weekly dataset backup;
- the weekly dataset backup which backs up the entirety of the data drive;
- the weekly system backup which backs up the system files, the registry, software and standard client data.

In addition to the backups to DAT tape, a set of system disks for each server will be re-built each week and a safe pair stored securely in the fire-proof room. This will provide fast recovery of the system disks in the event of a major corruption of the system.

The backup tape rotation scheme is shown in Appendix 1. A summary of the backup hardware is shown in Appendix 2.

1.0

RESPONSIBILITY AND COVER

Refer to the System Availability Schedule in section 6.16 of the FM Unit Procedures (QF/2).

The backup administrator is responsible for ensuring that the backups are being carried out as per procedures. Any faults / queries that develop should be reported to the backup administrator immediately.

2.0

VIRUS DETECTION ROUTINES

Up to date virus checking software is installed on both of the servers. Virus checking routines are run every day at 18:00. In the event of a virus being detected by the virus checking software, that night's backup routine will still run.

Any viruses that are discovered are recorded in the event log. See section 5.0, backup checks.

3.0

DAILY DIFFERENTIAL DATA BACKUPS

The following steps should be performed on both the primary and backup servers:-

- a) Insert the appropriate daily tapes into the DAT drives on the servers (e.g. MON);
- b) Run the daily backup icon from the *Backup / Restore* window on the program manager screen on both servers.

This will launch batch files that will start a differential backup at 19:00.

Appendix 3 shows the location of the batch files that are used in the backup / restore process.

Appendix 4 shows the contents of the daily differential backup scheduling batch file.

Appendix 5 shows the contents of the daily differential NTBackup batch file.

4.3

Sunday on the Backup Server

4.3.1

Restore of the dataset files

The following steps should be performed on the backup server (GSEP22):

- a) Insert the weekly dataset tape from GSEP21
 - b) Format the E: drive on the backup server using the command `FORMAT E: /FS:NTFS`
- Restore the data including permissions and set the log to the path:
E:\FIL_TRAN\LOG\RESTDATA.LOG

4.4

Monday on the Backup Server

4.4.1

Restore of the software

- a) Insert the system tape from GSEP21
 - b) Format the F: drive on the backup server using the command `FORMAT F: /FS:NTFS`
- Restore the software including permissions and set the log to the path:
E:\FIL_TRAN\LOG\RESTSOFT.LOG

4.0

WEEKLY BACKUPS

4.1

Friday on the Servers

- a) Insert the appropriate Friday dataset tapes into the DAT drives on the servers (e.g. GSEP21 FRIWK2);
Note: each Friday dataset tape set consists of two tapes due to all of the data not being able to fit onto one tape. e.g. GSEP21 FRI WK2 & GSEP21 FRI WK2 B
- b) Run the Friday dataset icon from the *Backup / Restore* window on the program manager
This will launch a batch file that will start a full dataset backup at 19:00.
Note: A second tape is required which requires a manual intervention on the following (Saturday) morning.
Note: A verify routine is not run since the verify would be taking place during Saturday when files are being changed anyway.
Appendix 6 shows the contents of the weekly dataset scheduling batch file.
Appendix 7 shows the contents of the weekly dataset NTBackup batch file.

4.2

Saturday on the Servers

- a) Once the datasets are complete, insert the appropriate system tapes into each server (e.g. GSEP21 SYSWK2).
- b) Run the System backup icon from the *Backup / Restore* window on the program manager
This will launch a batch file that will start a system and software backup at 17:00
Appendix 8 shows the contents of the system scheduling batch file.
Appendix 9 shows the contents of the system NTBackup batch file.

4.3

Sunday on the Backup Server

4.3.1

Restore of the dataset files

The following steps should be performed on the backup server (GSEP22):

- a) Insert the weekly dataset tape from GSEP21
- b) Format the E: drive on the backup server using the command `FORMAT E: /FS:NTFS`
Restore the data including permissions and set the log to the path:
`E:\FIL_TRANLOG\RESTDATA.LOG`

4.4

Monday on the Backup Server

4.4.1

Restore of the software

- a) Insert the system tape from GSEP21
- b) Format the F: drive on the backup server using the command `FORMAT F: /FS: NTFS`
Restore the software including permissions and set the log to the path:
`E:\FIL_TRANLOG\RESTSOFT.LOG`

5.0

WEEKLY SYSTEM DISK RE-BUILDS

Each Sunday a re-build of the system disks must be carried out. As the operating system resides on a disk set managed by RAID 0 technology on hot swappable disks, it is possible to re-build the sets on-line. A two weekly rotation is employed, with each rotation containing 2 disks for each server. The rotation pattern is shown in Appendix 12

The re-builds are generated using the following procedure:

1. Remove SYSTEM DISK 1 and replace with corresponding spare disk
2. Allow time for the system to re-build - it is complete once the green light stops flashing
3. Remove SYSTEM DISK 2 and replace with corresponding spare disk
4. Allow time for the system to re-build - it is complete once the green light stops flashing
5. The safe set of disks can then transported to the fireproof room.

5.0

RECOVERY

5.1

Selected Data Restore

6.0

BACKUP CHECKS

After every scheduled backup, a corresponding event viewer log entry should be viewed. If the log entry in the event viewer does not exist the backup administrator must be immediately informed. Virus entries in the event viewer must be checked daily. Log files for each backup / restore process must also be checked for errors after each backup / restore process.

Daily tapes should be stored in the computer room because of the need for high availability. All other tapes and the disk sets should be removed to the fireproof room every Monday morning.

Appendix 10 shows a summary of the log files generated in the backup processes.

- stage two being the recovery from the last weekly SYSTEM tape;
- stage three being the recovery from the last weekly DATASET tape;
- stage four (if necessary) being the recovery from the last daily differential tape.

See document J:\BSD\PROJECTS\PCSYSTEM\DOCUMENT\DISASTER.W61 for more information on system recovery in the event of NT-AS becoming corrupt or some other reason for doing a complete system restore.

7.0 APPENDICES TAPE STORAGE

The 4 daily tapes, next weekly dataset and next weekly system set are held in a storage case beneath the primary server in the 4th floor computer room. The remaining tapes will be stored in the fire safe room in cabinet number 3.

Ensuring that the appropriate tapes have been placed into the server's DAT drives and that the server is ready for automatic backup will be the responsibility of the PC system administrators. A chart correlating the backup days/weeks with the normal monthly calendar will be displayed in the 4th floor computer room. See Appendix 11.

8.0 RECOVERY

8.1 Selected Data Restore

In the event of a user deleting important files/directories, or files/directories becoming corrupt, BSD will recover that file(s) /directory from the last known good backup (which should be the previous days differential backup) provided that a BSD request form has been completed.

8.2 System Recovery

In the event that a serious system error occurs and NT-AS becomes corrupted it will be necessary to do a three or four stage restore.

- stage one being the install of NT-AS from CD-ROM;
- stage two being the recovery from the last weekly SYSTEM tape;
- stage three being the recovery from the last weekly DATASET tape;
- stage four (if necessary) being the recovery from the last daily differential tape.

See document *j:\bsd\projects\pcsystem\document\disaster.w61* for more information on system recovery in the event of NT-AS becoming corrupt or some other reason for doing a complete system restore.

APPENDICES Backup Tape Rotation Scheme

| | |
|-------------|---|
| Appendix 1 | Backup Tape Rotation Scheme |
| Appendix 2 | Backup Hardware |
| Appendix 3 | Location of Batch Files that are used in the Backup / Restore Process |
| Appendix 4 | Daily Differential Backup Scheduling Batch File |
| Appendix 5 | Daily Differential NTBackup Batch File |
| Appendix 6 | Weekly Dataset Scheduling Batch File |
| Appendix 7 | Weekly Dataset NTBackup Batch File |
| Appendix 8 | System Scheduling Batch File |
| Appendix 9 | System NTBackup Batch File |
| Appendix 10 | Summary of Log Files Generated |
| Appendix 11 | Backup Tape Rotation Schedule |

WEEK 3

DAILYTAPE 1 DAILYTAPE 2 DAILYTAPE 3 DAILYTAPE 4 FRI TAPE 5
FRI TAPE 6
SYS TAPE 7

WEEK 4

DAILYTAPE 1 DAILYTAPE 2 DAILYTAPE 3 DAILYTAPE 4 FRI TAPE 8
FRI TAPE 9
SYS TAPE 10

WEEK 5

DAILYTAPE 1 DAILYTAPE 2 DAILYTAPE 3 DAILYTAPE 4 FRI TAPE 11
FRI TAPE 12
SYS TAPE 13

I.e. The same 4 tapes are used for the daily backups (Monday to Thursday). Every Friday a dataset backup is made to one of three other tapes (FRIWK1, FRIWK2, FRIWK3) and a system backup is made to one of three other tapes (SYSWK1, SYSWK2, SYSWK3). The remaining tapes are used for monthly backups.

The full 6 month cycle will require a total of 31 tapes, made up of:

- 4 daily dataset tapes,
- 6 weekly dataset tapes,
- 3 weekly system tapes,
- 12 monthly dataset tapes,
- 6 monthly system tapes.

Appendix 1 Backup Tape Rotation Scheme

| <u>MONDAY</u> | <u>TUESDAY</u> | <u>WEDNESDAY</u> | <u>THURSDAY</u> | <u>FRIDAY</u> |
|---------------|----------------|------------------|-----------------|---------------|
| WEEK 1 | | | | |
| DAILYTAPE 1 | DAILYTAPE 2 | DAILYTAPE 3 | DAILYTAPE 4 | FRI TAPE 5 |
| | | | | FRI TAPE 6 |
| | | | | SYS TAPE7 |
| WEEK 2 | | | | |
| DAILYTAPE 1 | DAILYTAPE 2 | DAILYTAPE 3 | DAILYTAPE 4 | FRI TAPE 8 |
| | | | | FRI TAPE 9 |
| | | | | SYS TAPE 10 |
| WEEK 3 | | | | |
| DAILYTAPE 1 | DAILYTAPE 2 | DAILYTAPE 3 | DAILYTAPE 4 | FRI TAPE 11 |
| | | | | FRI TAPE 12 |
| | | | | SYS TAPE 13 |
| WEEK 4 | | | | |
| DAILYTAPE 1 | DAILYTAPE 2 | DAILYTAPE 3 | DAILYTAPE 4 | FRI TAPE 14 |
| | | | | FRI TAPE 15 |
| | | | | SYS TAPE 16 |
| WEEK 5 | | | | |
| DAILYTAPE 1 | DAILYTAPE 2 | DAILYTAPE 3 | DAILYTAPE 4 | FRI TAPE 17 |
| | | | | FRI TAPE 18 |
| | | | | SYS TAPE 19 |

i.e. The same 4 tapes are used for the daily backups (Monday to Thursday). Every Friday a dataset backup is made to one of three other tapes (FRIWK1, FRIWK2, FRIWK3) and a system backup is made to one of three other tapes (SYSWK1, SYSWK2, SYSWK3). The remaining tapes are used for monthly backups.

The full 6 month cycle will require a total of 31 tapes, made up of:

- 4 daily dataset tapes;
- 6 weekly dataset tapes;
- 3 weekly system tapes;
- 12 monthly dataset tapes;
- 6 monthly system tapes.

Appendix 2 Backup Hardware Files that are used in the Backup / Restore Process

Both of the servers use identical hardware with respect to backup devices. The primary backup device used is a Compaq 5 gigabyte (gb) digital audio tape (DAT) drive. The media used is 4mm/90m helical scan data cartridges with a nominal capacity of 2.0 GB. By enabling the disk compression algorithms facility on the DAT drive, up to 5 GB can be backed up to a tape. The secondary backup device used is the 3.1/2" floppy disk drive.

Appendix 3 Location of Batch Files that are used in the Backup / Restore Process

```
C:\SERV_UTL\UTIL\SCRIPTS\BACKUP\SCHEDULE\DAILY.BAT
    THE DAILY BACKUP BATCH FILE TO RUN AT 19:00
+---+---SCRIPTS
| +---BACKUP
|   +---JOB_RUN
|     \---SCHEDULE
```

Appendix 4 Daily Backup Scheduling Batch File

```
REM *** C:\SERV_UTL\SCRIPTS\BACKUP\SCHEDULE\DAILY.BAT  
REM *** SCHEDULE THE DAILY BACKUP BATCH FILE TO RUN AT 19:00
```

```
AT \GSEP21 19:00 /INTERACTIVE "C:\SERV_UTL\SCRIPTS\BACKUP\JOB_RUN\DAILY.BAT"
```

```
HTBACKUP BACKUP D \V D \GSEP21 DAILY DATA BACKUP /M:ON /T DIFFERENTIAL /  
/E:FS /TRANLOG:DAILYQAT.LOG  
HTBACKUP BACKUP F \V G \A \GSEP21 DAILY SOFTWARE BACKUP /M:ON /T DIFFERENTIAL /  
/E:FS /TRANLOG:DAILYSW.LOG
```

Appendix 5 Daily Differential NTBackup Batch File

```
REM *** O/S VER 3.51
REM *** C:\SERV_UTL\SCRIPTS\BACKUP\JOB_RUN\DAILY.BAT
REM *** DAILY DIFFERENTIAL BACKUP BATCH FILE

REM ***** START BACKUP ROUTINE *****

NTBACKUP BACKUP D: /V /D "GSEP21 DAILY DATA BACKUP" /HC:ON /T DIFFERENTIAL /L
"D:\FIL_TRAN\LOG\DAILYDAT.LOG"
NTBACKUP BACKUP F: /V /D /A "GSEP21 DAILY SOFTWARE BACKUP" /HC:ON /T DIFFERENTIAL /L
"D:\FIL_TRAN\LOG\DAILYSW.LOG"

REM *****
```

Appendix 6 Weekly Dataset Scheduling Batch File

```
REM *** C:\SERV_UTL\SCRIPTS\BACKUP\SCHEDULE\DATASET.BAT  
REM *** SCHEDULE THE WEEKLY DATASET BACKUP BATCH FILE TO RUN AT 19:00  
AT 19SEP21 19:00 /INTERACTIVE "C:\SERV_UTL\SCRIPTS\BACKUP\JOB_RUN\DATASET.BAT"
```

```
REM ***** START BACKUP ROUTINE *****  
NTBACKUP BACKUP D:\ /D "09SEP21 WEEKLY DATASET BACKUP" /NOON /NORMAL /S  
/D:\FR_TRANLOG-DATASET.LOG  
REM ***** END BACKUP ROUTINE *****
```


Appendix 7 Weekly Dataset NTBackup Batch File

```
REM *** C:\SERV\UTIL\SCRIPTS\BACKUP\SCHEDULE\SYSTEM.BAT
REM *** O/S VER 3.51
REM *** C:\SERV\UTIL\SCRIPTS\BACKUP\JOB_RUN\DATASET.BAT
REM *** FRIDAY DATASET FULL BACKUP BATCH FILE
```

```
REM ***** START BACKUP ROUTINE *****
```

```
NTBACKUP BACKUP D: /V /D "GSEP21 WEEKLY DATASET BACKUP" /HC:ON /T NORMAL /L
"D:\FIL_TRAN\LOG\DATASET.LOG"
```

```
REM ***** END BACKUP ROUTINE *****
```

Appendix 8 System Schedule Batch File

```
REM *** C:\SERV_UTL\SCRIPTS\BACKUP\SCHEDULE\SYSTEM.BAT
REM *** SCHEDULE THE WEEKLY SYSTEM BACKUP BATCH FILE TO RUN AT 19:00
AT 19SEP21 19:00 /INTERACTIVE "C:\SERV_UTL\SCRIPTS\BACKUP\JOB_RUN\SYSTEM.BAT"
```

```
REM ***** START BACKUP ROUTINE *****
XBACKUP BACKUP C:\* /D "GSEP21 SYSTEM BACKUP" /NC:ON /T NORMAL 1 "D:\FILE_TRAN\LOG\SYSTEM.LOG"
XBACKUP BACKUP F:\* /D "GSEP21 SOFTWARE BACKUP" /NC:ON /T NORMAL 1
"D:\FILE_TRAN\LOG\SOFTWARE.LOG"
REM ***** BACKUP ROUTINE COMPLETE *****
```

Appendix 9 System NTBackup Batch File

REM *** O/S VER 3.51

REM *** C:\SERV_UTL\SCRIPTS\BACKUPJOB_RUN\SYSTEM.BAT

REM *** SYSTEM & SOFTWARE BACKUP BATCH FILE

DAILYSOFT.LOG Daily differential backup of software (on the daily tape)

REM ***** START BACKUP ROUTINE *****

NTBACKUP BACKUP C: /B /D "GSEP21 SYSTEM BACKUP" /HC:ON /T NORMAL /L "D:\FIL_TRAN\LOG\SYSTEM.LOG"

NTBACKUP BACKUP F: /A /D "GSEP21 SOFTWARE BACKUP" /HC:ON /T NORMAL /L
"D:\FIL_TRAN\LOG\SOFTWARE.LOG"

REM ***** BACKUP ROUTINE COMPLETE *****

WEEKLYSOFT.LOG Weekly software restore

Appendix 10 Summary of Log Files Generated

| | |
|--------------|---|
| DAILYDAT.LOG | Daily differential backup of data |
| DAILYSW.LOG | Daily differential backup of software (on the daily tape) |
| DATASET.LOG | Weekly dataset backup |
| SYSTEM.LOG | Weekly system backup |
| SOFTWARE.LOG | Weekly software backup (on the system tape) |
| RESTDATA.LOG | Weekly dataset restore |
| RESTSOFT.LOG | Weekly software restore |

Appendix 11 System Disk Rotation Schedule

| WEEK ENDAR YNE | TAPE NAMES | COMMENTS | SPACE |
|-------------------------|----------------|-------------------------|-------|
| WEEK 1 | | | |
| GSEP21 O/S DISK 1 SET 1 | FR1WK1 | | |
| GSEP21 O/S DISK 2 SET 1 | FR1WK2 | | |
| | FR1WK3 | | |
| WEEK 2 | | | |
| GSEP21 O/S DISK 1 SET 2 | FR1WK1 | Finance In | |
| GSEP21 O/S DISK 2 SET 2 | FR1WK2 | Quality In | |
| 02 DEC 94 | FR1WK3 | Commerce Partially In | |
| 09 DEC 94 | FR1MT2 | | |
| 16 DEC 94 | FR1WK1 | | |
| 23 DEC 94 | FR1WK2 | Manufacturing In | |
| 30 DEC 94 | | No Backup Performed | |
| 06 JAN 95 | FR1WK3 | Factory Accounts In | |
| 13 JAN 95 | FR1MT3 | Factory Data 2 20% In | |
| 20 JAN 95 | FR1WK1 | All Accounts In | |
| 27 JAN 95 | FR1WK2 | Engineering 3 In | |
| 03 FEB 95 | FR1WK3 | Engineering 4 In | |
| 10 FEB 95 | FR1MT4 | Personal In (Partially) | |
| 17 FEB 95 | FR1WK1 | All In | |
| 24 FEB 95 | FR1WK2 | Servers Upgraded In | |
| 03 MAR 95 | FR1WK1: SYSWK3 | New Backup Routines | |
| 10 MAR 95 | FR1MT5: SYSMT5 | OK | |
| 17 MAR 95 | FR1WK1: SYSWK1 | OK | 528 |
| 24 MAR 95 | FR1WK2: SYSWK2 | OK | 520 |
| 31 MAR 95 | FR1WK3: SYSWK3 | OK | 475 |
| 07 APR 95 | FR1MT6: SYSMT6 | OK | 445 |
| 14 APR 95 | FR1WK1: SYSWK1 | OK | 431 |
| 21 APR 95 | FR1WK2: SYSWK2 | OK | 422 |
| 28 APR 95 | FR1WK3: SYSWK3 | OK | 437 |
| 05 MAY 95 | FR1MT1: SYSMT1 | OK | 297 |
| 12 MAY 95 | FR1WK1: SYSWK1 | OK | 360 |
| 19 MAY 95 | FR1WK2: SYSWK2 | OK | 332 |
| 26 MAY 95 | FR1WK3: SYSWK3 | OK | 481 |
| 02 JUN 95 | | No Backup Performed | |
| 09 JUN 95 | FR1MT2: SYSMT2 | OK | 408 |
| 16 JUN 95 | FR1WK1: SYSWK1 | OK | 400 |

Appendix 12 Backup Tape Rotation Schedule

| CALENDAR W/E | TAPE NAMES | COMMENTS | SPACE |
|--------------|----------------|--------------------------|-------|
| 21 OCT 94 | FRIWK1 | | 262 |
| 28 OCT 94 | FRIWK2 | | 268 |
| 04 NOV 94 | FRIWK3 | | 236 |
| 11 NOV 94 | FRIMT1 | | 161 |
| 18 NOV 94 | FRIWK1 | Finance In | |
| 25 NOV 94 | FRIWK2 | Quality In | |
| 02 DEC 94 | FRIWK3 | Commerce Partially In | |
| 09 DEC 94 | FRIMT2 | | |
| 16 DEC 94 | FRIWK1 | OK | |
| 23 DEC 94 | FRIWK2 | Manufacturing In | |
| 30 DEC 94 | | No Backup Performed | |
| 06 JAN 95 | FRIWK3 | Factory Accounts In | |
| 13 JAN 95 | FRIMT3 | Factory Data & PCs In | |
| 20 JAN 95 | FRIWK1 | All Accounts in & | |
| 27 JAN 95 | FRIWK2 | Engineering 3 In | |
| 03 FEB 95 | FRIWK3 | Engineering 4 In | |
| 10 FEB 95 | FRIMT4 | Personnel In (Partially) | |
| 17 FEB 95 | FRIWK1 | All In | |
| 24 FEB 95 | FRIWK2 | Servers Upgraded to | |
| 03 MAR 95 | FRIWK3; SYSWK3 | New Backup Routines | |
| 10 MAR 95 | FRIMT5; SYSMT5 | OK | |
| 17 MAR 95 | FRIWK1; SYSWK1 | OK | 528 |
| 24 MAR 95 | FRIWK2; SYSWK2 | OK | 520 |
| 31 MAR 95 | FRIWK3; SYSWK3 | OK | 475 |
| 07 APR 95 | FRIMT6; SYSMT6 | OK | 445 |
| 14 APR 95 | FRIWK1; SYSWK1 | OK | 431 |
| 21 APR 95 | FRIWK2; SYSWK2 | OK | 422 |
| 28 APR 95 | FRIWK3; SYSWK3 | OK | 437 |
| 05 MAY 95 | FRIMT1; SYSMT1 | OK | 297 |
| 12 MAY 95 | FRIWK1; SYSWK1 | OK | 360 |
| 19 MAY 95 | FRIWK2; SYSWK2 | OK | 332 |
| 26 MAY 95 | FRIWK3; SYSWK3 | OK | 481 |
| 02 JUN 95 | | No Backup Performed | |
| 09 JUN 95 | FRIMT2; SYSMT2 | OK | 406 |
| 16 JUN 95 | FRIWK1; SYSWK1 | OK | 400 |

| | | | |
|-----------|---------------|-------------|-----|
| 23 JUN 95 | FRIWK2;SYSWK2 | | |
| 30 JUN 95 | FRIWK3;SYSWK3 | | |
| 07 JUL 95 | FRIMT3;SYSMT3 | | |
| 14 JUL 95 | FRIWK1;SYSWK1 | | |
| 21 JUL 95 | FRIWK2;SYSWK2 | DIDN'T RUN | 202 |
| 28 JUL 95 | FRIWK3;SYSWK3 | DIDN'T RUN | 200 |
| 04 AUG 95 | FRIMT4;SYSMT4 | DIDN'T RUN | 230 |
| 11 AUG 95 | FRIWK1;SYSWK1 | DIDN'T RUN | 190 |
| 18 AUG 95 | FRIWK2;SYSWK2 | GSEP21 ONLY | |
| 25 AUG 95 | FRIWK3;SYSWK3 | OK | |
| 01 SEP 95 | FRIMT5;SYSMT5 | OK | |
| 08 SEP 95 | FRIWK1;SYSWK1 | OK | |
| 15 SEP 95 | FRIWK2;SYSWK2 | OK | |
| 22 SEP 95 | FRIWK3;SYSWK3 | OK | |
| 29 SEP 95 | FRIMT6;SYSMT6 | OK | |
| 06 OCT 95 | FRIWK1;SYSWK1 | OK | |
| 13 OCT 95 | FRIWK2;SYSWK2 | OK | |
| 20 OCT 95 | FRIWK3;SYSWK3 | | |
| 27 OCT 95 | FRIMT1;SYSMT1 | | |
| 03 NOV 95 | FRIWK1;SYSWK1 | | |
| 10 NOV 95 | FRIWK2;SYSWK2 | | |
| 17 NOV 95 | FRIWK3;SYSWK3 | | |
| 24 NOV 95 | FRIMT2;SYSMT2 | | |
| 01 DEC 95 | FRIWK1;SYSWK1 | | |
| 08 DEC 95 | FRIWK2;SYSWK2 | | |
| 15 DEC 95 | FRIWK3;SYSWK3 | | |
| 22 DEC 95 | FRIMT3;SYSMT3 | | |
| 29 DEC 96 | SKIPPED ? | | |
| 05 JAN 96 | FRIWK1;SYSWK1 | | |
| 12 JAN 96 | FRIWK2;SYSWK2 | | |
| 19 JAN 96 | FRIWK3;SYSWK3 | | |
| 26 JAN 96 | FRIMT4;SYSMT4 | | |
| 02 FEB 96 | FRIWK1;SYSWK1 | | |
| 09 FEB 96 | FRIWK2;SYSWK2 | | |
| 16 FEB 96 | FRIWK3;SYSWK3 | | |
| 23 FEB 96 | FRIMT5;SYSMT5 | | |
| 01 MAR 96 | FRIWK1;SYSWK1 | | |
| 08 MAR 96 | FRIWK2;SYSWK2 | | |
| 15 MAR 96 | FRIWK3;SYSWK3 | | |

| | | | |
|-----------|---------------|--|--|
| 22 MAR 96 | FRIWT6;SYSMT6 | | |
| 29 MAR 96 | FRIWK1;SYSWK1 | | |
| 05 APR 96 | FRIWK2;SYSWK2 | | |
| 12 APR 96 | FRIWK3;SYSWK3 | | |
| 19 APR 96 | FRIWT1;SYSMT1 | | |
| 26 APR 96 | FRIWK1;SYSWK1 | | |
| 03 MAY 96 | FRIWK2;SYSWK2 | | |
| 10 MAY 96 | FRIWK3;SYSWK3 | | |

The backup and restore routines for the 2 NT domain servers, henceforth referred to as servers 1 & 2. The system owner is Ian Mackay, LG IT manager.

The servers shall be backed up daily to DAT tape. Three types of backup routines shall be utilized:

- The daily backup (Mon, Tue, Wed, Thu) will consist of a differential backup i.e. all data and software created/modified since the last weekly system backup.
- the weekly differential backup which backs up the entirety of the data drive.
- the weekly system backup which backs up the system files, the registry, software and standard client data.

In addition to the backups to DAT tape, a set of system disks for each server will be re-built each week and a safe pair stored securely in the fire-proof room. This will provide fast recovery of the system disks in the event of a major corruption of the system.

The backup tape rotation scheme is shown in Appendix 1. A summary of the backup hardware is shown in Appendix 2.