FSYS - Software

DFSee

OS/2 WARP Server for e-business

ALL06: DFSee

Usage examples and Q&A

Who am I

- Jan van Wijk
  - Software Engineer, C, REXX, Assembly
  - Founded FSYS software in july 2001 ...
  - Started with OS/2 in 1987, development of OS/2 1.0 Extended Edition (Query Manager)
  - Used to be a system-integration architect at a large Bank, 500 servers en 7500 workstations.
  - Home Pages: http://www.fsys.nl
    http://www.dfsee.com

FSYS Software offerings

- DFSee, OS/2, DOS, Win-NT
  - Filesystem analysis and repair
    - Partitions, FDISK functionality
    - HPFS, FAT, FAT32, NTFS, JFS
- LPTool, OS/2 only
  - Parallel port connectivity utility
    - File transfer
    - Remote execution
- Several small (OS/2) utilities

Presentation contents and targets

- Overview of the scenario to make (this) laptop a multiple boot workstation with W98, Win2000 and eComstation, starting with W98 preload

- DFSee recovery examples
  - Simple DFSUNFD analysis and CREATE solution
  - Finding the lost HPFS partition
  - Another DFSUNFD case, with recover SCRIPT

- Several partition displays and checks, Q & A
- UNDELETE files on HPFS (or NTFS), demo!

Win98 preload to multi-OS laptop

- Startpoint is a laptop with 1 18Gb FAT32 partition

- Intended configuration
  - Windows-98 preload still working (but smaller)
  - Windows-2000 usable for software development and test
  - eComstation fully functional for all serious work :-)

  - All of them selectable from the Bootmanager menu

  - Data exchange possible. but without too much risk

Choosen partitioning scheme

- Ideal is OS's in own primary (isolation for safety)
- Best possible solution (using max of 3 primaries)
  - Primary Bootmanager (1 cylinder, usually 7.8Mb)
  - Primary FAT32 for Win-98 preload, about 3Gb
  - Primary NTFS for Win2000, about 3Gb
  - Logical HPFS for eComstation system, 1Gb
  - Logical FAT for data-exchange, about 500Mb

  - Logical FAT32 data partition, about 3Gb
  - Logical HPFS data partition, about 5Gb
  - Logical NTFS data partition, about 3Gb

Other considerations, tools used

- Keep bootables below 1024 cylinders if possible, allows access using older tools as well ...
- Keep driveletters the same in every OS, made easier with eCS LVM and Win-NT/2000 diskmanager
- Tools needed for partitioning:
  - PartitionMagic (version 4.01 used) to resize FAT32
  - DFSee (version 4.00 used) for most other manipulations
  - Native OS tools like FDISK, LVM and DiskManager

Phase 1, initial scenario (the plan :-)

- Resize existing 18Gb to 3Gb and move it to 2nd cylinder to make room for BootManager
- Create the OS-system partitions with DFSee
- Run VCU.EXE and LVM to set fancy names, and install the newest BootManager
- Install eComstation using the bootable CD-rom
- Add partitions with DFSee and LVM
- Set 2nd primary active and install Win-2000
- Format data partitions from appropriate OS

Phase 2, executing, problems - 1

- Resize existing 18Gb to 3Gb and move it
  - No real problem, but partition not on cylinder boundary
- Create the OS-system partitions with DFSee
  - DFSDOS can't see beyond 8Gb! (Thinkpad Int13 problem)
  - Used eCS boot disks and OS/2 version, no problems ...
- Run VCU.EXE to generate LVM info
  - PROBLEM: No LVM data on FAT32 partition!
- Solution: change type to 0x06, delete LVM-info
- run VCU again, set type back to 0x0b

Phase 2, executing, problems - 2

- Now there is no LVM info on hidden NTFS
- SOLUTION: create that later with LVM.EXE

- Install eComstation using the bootable CD-rom
  - PROBLEM: CD hangs on boot
  - SOLUTION: force VGA mode in pre-boot
- Add rest of partitions with DFSee / LVM
- Create volumes (and names) with LVM.EXE

  - Note: partitions created with DFSee (or other) will be given LVM info on next use of LVM.EXE

Phase 2, executing, problems - 3

- Format FAT32 data partition from Win-98
  - PROBLEM: Disk corrupted near cyl. 1024!
  - SOLUTION tried: use 0x0f/0x0c for partition
  - PROBLEM: Disk corrupted again!
  - SOLUTION: No FAT32 data, use FAT16

Phase 2, executing, problems - 4

- Set 2nd primary active and install Win-2000
  - Protect Bootmanager with W2KBM, set 2nd active
  - Install Win-2000 with standard CD boot
- Format HPFS and NTFS partitions from appropriate operating system

  - Resulting system in use for about 3 months now ...

DFSUNFD recovery example 1

- This is (real-life) description of recovering a system using the DFSUNFD script and CREATE commands

- Disaster: laptop started with recovery CDROM
- Result: harddisk seems empty, no partitions
- DFSUNFD script was run, analysis shows:
  - all partitions are still present, MBR is cleared
  - some sizes reported wrong because of that (warnings)
- RECOVERY:
  - use CREATE to rebuild partition tables

DFSUNFD, recovery commands

- DFS.EXE ;start DFSee
  - log recover ;start a logfile
  - cr pri BMGR 7 ;bootmanager, 1 cylinder
  - cr pri HPFS 1535 ;primary HPFS, will be 1537 Mb
  - cr pri FAT 517 ;primary FAT , will be 518 Mb
  - cr log HPFS 1535 ;logical HPFS, will be 1537 Mb
  - cr log HPFS 1535 ;logical HPFS, will be 1537 Mb
  - cr log HPFS 1535 ;logical HPFS, will be 1537 Mb
  - cr log HPFS 2077 ;logical HPFS, will be 2079 Mb
  - part -s ;show result as a large table
  - q ;quit DFSee

DFSUNFD remarks

- Often the DFSUNFD logfile shows a lot of possible partitions that are NOT current anymore.
  They are the result of previous partitioning schemes or resizing and moving partitions.
  - These situation require good analysis of the logfile and as mutch information about the 'expected' partitions as possible

- Recovery often starts with a NEWMBR command:
  - NEWMBR 1 clean ;new MBR code, clear partition table

  This MBR was already cleared by the recovery CDROM :-)

The case of the lost HPFS partition

- Another real-life story, eComstation / LVM related

- Disaster: volume created as type 35 (LVM) not 07
- Result: partition shows up as 'unformatted'
- RECOVERY:
  - set type to 0x07 (compatibility, IFS)
  - select partition and force HPFS mode
  - recreate the HPFS bootsector with FIXBOOT

  - Note: this was on 3rd disk in a 4-disk setup

Lost HPFS partition, recovery

- DFS.EXE
  - log VICTIM3 ;start logfile
  - pclear 3 lvms ;clear remaining LVM-info
  - settype 04 3 07 35 ;set type back to 0x07 (IFS)
  - part 4 ;select and display partition 4
  - fs hpfs ;force HPFS mode
  - fixboot ;create new HPFS bootsector
  - part 4 ;select and display partition 4
  - q ;quit DFSee

Note: redisplay on FIXBOOT is automatic in 4.06 and newer

DFSUNFD recovery example 1

- This is another real-life DFSUNFD scenario, now solved with a complete DFS script (RUN ...)

- Disaster: partition-tables damaged after some experiments with partitioning tools
- Result: Start of a novel and email gone ...
- DFSUNFD script was run, analysis shows:
  - most partitions are still present, EBR chain damaged
- RECOVERY:
  - use a RECOVER.DFS script with CREATE commands to rebuild the missing partition tables (EBR chain)

DFSUNFD, recovery script

- DFS.EXE run recover

  This will run the DFSee commands contained in the scriptfile 'recover.dfs'. (to be shown here ...)

- The script contains CREATE commands to define the missing partitions, and also some extra commands that make it easy to test using a virtual disk.

- A logfile will be created showing the result.

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Any Questions?