DFSee 12.x overview, demo - Q&A

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DFSee functionality overview
New stuff in versions 9 trough 12
Demos, Questions and Answers

FSYS - Software DFSee

Presentation contents

- Who am I

- DFSee 12.x functional overview

- Version history, new in versions 9 .. 12

- Demo of several DFSee functions

  - DFSDISK procedure, 'Analyse disks for support'
  - Binary editor, and disassembler
  - Create a bootable USB-stick with DFSee 12.1
  - Whatever you like (and is doable :-)

Who am I ?

Jan van Wijk

- Software Engineer, C, Rexx, Assembly, PHP
- Founded FSYS Software in 2001, developing and supporting DFSee from version 4 to 12.x
- First OS/2 experience in 1987, developing parts of OS/2 1.0 EE (Query Manager, later DB2)
- Used to be a systems-integration architect at a large bank, 500 servers and 7500 workstations
- Developing embedded software for machine control and appliances from 2007 onwards

Home page: *http://www.dfsee.com*

What is DFSee, functional view

- DFSee is an OS neutral utility like FDISK, LVM, PQ-Partition Magic, PQ-Drive-Image Norton-Ghost, Undelete and more ...

- Main areas of functionality:
  - Backup and restore of partitioning information
  - Search missing partitions and recreate them
  - FDISK/LVM create and maintain partitions
  - Imaging, disk-areas to/from (compressed) files
  - Cloning, disk-areas to/from other disk-areas
  - FS-specific: Check, Display, Undelete and Fix
  - Disk data analysis and update (binary edit, disasm)

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Managing partition info

- Backup/Restore commands Psave/Prestore and the corresponding items in the FDISK menu

- BSFIND command to search lost partitions

- Both are integrated in the DFSDISK procedure, preparing you for a partition recovery ...
  (Can be done 'post-disaster' as well :-)

  Menu: 'Scripts -> Analyse disks for support'

  - Recovery script can often be made (and tested!) based on the (7) DFSDISK result files

Create and maintain partitions

- Use the CR/DELETE commands or menu items to manage the partition tables

- Use the LVM command/menu to create and update the OS/2 or eCS LVM information

- Use the Partition Table Editor (PTE) to directly manipulate table entries

- Use the various SETxx and FIXxx commands to change partition properties and fix errors
  - (see the DFSxxx.TXT documentation for details)

Imaging to/from files

- Imaging is a process where DFSee objects like disks or partitions are copied into a regular (often compressed) image-FILE

  - You NEED regular file-level access in the OS you are running to read/write this imagefile!

- Can use 'smart' technology to skip unused areas

- Images can be restored to the same or to a different object, but keep the SAME size!

- Imaging is used for backup and restore, including data transfer between systems

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Cloning between objects

- Cloning is a process where sectors from any DFSee object like disks and partitions are directly copied to another DFSee object

  - Disk-to-disk clone, as backup or recovery clone includes all partitioning and LVM info

  - Partition-to-partition clone, mainly for backup

- Special handling possible for bad sector areas

- Like imaging, can use 'smart' technology to skip any unused (freespace) areas in the object

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File recovery and undelete

- File recovery is the copying of file-data as a new file on another filesystem, retaining as much of the name, path and file properties as possible

- When targeting files that have been DELETED it is usually called 'UNDELETE'

- For 'normal' files it is often used to recover files from damaged or inaccessible filesystems

  - Uses a SEARCH, DISPLAY, RECOVER scenario
  - One file search/recover menu item for HPFS/NTFS/JFS

DFSee versions and user interface

- DFSee is available in an OS/2 (eCS), DOS, Windows-NT/W2K/XP/Vista/7/8, Linux, and an experimental MAC OS-X version.

  - It is a non-graphical text based program, can run from bootdiskette, bootable CD or USB stick
  - Most functions can be run from a MENU interface with additional dialogs
  - Much more through a command-line
  - Output can go to the screen AND a logfile
  - Command scripting capability (recovery)
    - Improved in 9.xx with many C/Perl-like features

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Major versions

- 1.xx 1994 HPFS browsing/fixing OS/2 16/32-bit
- 2.xx 1997 NTFS, FAT, FDISK, Imaging, setboot
- 3.xx 1999 Windowed UI, NT-version, DFSDISK
- 4.xx 2001 Cloning, Scripting, freespace-wipe
- 5.xx 2002 Menu-system, Dialogs, FS-resize
- 6.xx 2003 Linux version, Smart imaging
- 7.xx 2005 Installer, Mouse, new dialogs
- 8.xx 2006 JFS support, Sector edit, FAT format
- 9.xx 2007 Geo sniffing, more linux FS support
- 9.xx 2008 Enhanced (C/Perl) scripting support
- 10.x 2010 Bootable USB stick, better scripting
- 11.x 2012 Many smal enhancements and fixes
- 12.x 2014 Basic/Expert menu, DUMPFS, EXFAT

What is new in DFSee 9.xx

- Contents based disk geometry (sniffing)
  - Using partition-tables and LVM information
  - Can be disabled using a '-geocalc-' switch

- EXT2/3 and ReiserFS basic support
  - allows disk-allocation map, 'smart' imaging/cloning but no file level displays and recovery yet

- GRUB detailed reporting and analysis

- Generate HTML menu-documentation

  - See DFSHIST.TXT and history web-page

New in version 9, continued

- Greatly enhanced native scripting capabilities

  - Uses 'C' and 'Perl' like expressions, variables and control statemens like if-then-else and while, and with direct access to many DFSee internal variables ...

    Also see seperate 'TxScript' presentation'

  - Used for recovery scripts, and USB-stick creation

- Disassembler modus (F2) for x86 processors added to the binary sector editor

  - Great for analysis of bootcode, or any other piece of x86 code you may encounter while browsing your disk ...

What is new in DFSee 10.x

- ## Bootable USB stick/disk creation
  - Using PenDriveLinux ISO boot selection menu
  - Boots the standard DFSee 10.x ISO
  - Boots into the PartedMagic Linux ISO
  - User adaptable.

- ## Enhancements to scripting
  - Verbose mode with variable value expansion
  - Single-step mode for debugging a script

- ## Updated FreeDOS, including most drivers
  - Start menu includes special 'boot from USB' option

- ## Many other fixes and enhancements

What is new in DFSee 11.x

- User interface allows SORTING most lists

- JFS/HPFS bootsector driveletter display/change

- Better 'enhanced format' geo support, 1-MiB/SSD

- Display-only 'GPT' style partition support

- More complete functionality for FAT(32)

- Reset 'bad sectors' on NTFS, HPFS and FAT

- WPI install, distr. ZIP and desktop script optimized
  - OS/2 binaries now reside in 'BIN' directory, not 'OS2'

What is new in DFSee 12.x

- 'Basic' versus 'Expert' user interface
  - Default is to use the 'Basic' mode, reducing complexity
    - Only the most used menu-items and options are present
    - Makes using DFSee a less 'frightening' experience

- Search/Grep capability in HELP and Output text
  - Forward/Backward searching, Grep result-list selection

- Support for the ExFAT filesystem (from 12.1)
  - ExFAT usage is mandatory for SD-Cards over 32Gb
  - ExFAT drivers available on Windows, OS-X and Linux
    (and on many cameras supporting huge SD media)

  - DFSee supports ExFAT for most of its operations:
    - Display boot-record, space-allocation and directories
    - Use allocation info for 'smart' imaging and cloning
    - Recover (inaccessible) files to another drive

Interactive binary editing

- Large window with HEX and ASCII sections

- Variable of lines and columns, user selectable

- Integrated SEARCH facility, highlighted result

- Variable item size, sectors, clusters ...
  (in any DFSee object, disk, partition etc)

- Editing of files of any size, byte size granularity,
  including insert and delete at the EOF position

- X86 disassembler modus for x86 machine code

Enhanced native scripting

- Backwards compatible with existing .DFS scripts

- Much better error checking possible

- Direct access to much DFSee specific info, including disk sectors from a script

- Powerful expressions, variables and functions
  - Can be used directly from the DFSee commandline too: example, show current sector-number: say {i2hex($_this)}

- Conditional and looping control allows more intelligent and powerful scripts

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Bootable USB stick, Create

- **Original: PenDriveLinux tool, Windows only**

- **Captured in DFSee image DFSUSB32.IMZ**

- **Automated in script DFSUSB32.DFS**

  - Scripts >> Create bootable (USB) disk >> select disk (available ONLY in the 'Expert UI Mode' from 12.x on)

  - Creates 32Gb bootable FAT32 for ISO's and DFSee, then resizes that to the actual size of the USB-stick

  - More information in DFSUSB32.txt

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Bootable USB stick, Boot


```
GRUB4DOS 0.4.4 2009-06-20, Memory: 636K / 2045M, MenuEnd: 0x48C4C          0

 Boot FreeDOS and run DFSee, select option '0' for file access to the stick
 Boot Parted Magic Linux, find a DFSee icon on the stick in "My Documents"




                              Multiboot ISOs
                              Pendrivelinux.com


                      DFSee


 Use the ↑ and ↓ keys to highlight an entry. Press ENTER or 'b' to boot.
 Press 'e' to edit the commands before booting, or 'c' for a command-line.

 The highlighted entry will be booted automatically in 6 seconds.
```

Bootable USB stick, Usage

- Boot the FreeDOS based ISO, select option '0' in its menu to access the stick itself too. (Can be made the default in the ISO file)
  - Logs to ramdisk Z: by default (gone when not copied!)
  - May want to open a log on the stick D:\logs instead (get actual driveletter from the DFSee 'part' display)
  - Unfortunately, may cause a HANG on some systems

- Boot the PartedMagic Linux ISO
  - On Linux desktop, click "My Documents"
  - Find the stick, click it to mount and open root folder
  - Click the DFSee icon to start DFSee
  - Working directory is the sticks /logs directory

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DFSee 12.x DEMO topics

- Sector editor, sizing, undo, fill, search

- Binary file edit

- Create a bootable USB stick, using the menu

- Sector Lookup Table

- JFS recovery names

- Show ExFAT layout

- DFSDISK dialog

- Virtual disks, DFS -d-, add/remove media

- Recovery example, load .Pdx files

- Run a recovery script

- Using script variables and expressions