

# DFSee 14.x overview, demo - Q&A



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DFSee functionality overview  
New stuff in versions 9 through 14  
Demos, Questions and Answers

**FSYS** - *software* **DFSee**

# *Presentation contents*

- Who am I
- DFSee 14.x functional overview
- Version history, new in versions 9 .. 14
- Demo of several DFSee functions
  - DFSDISK procedure, 'Analyse disks for support'
  - Binary editor, and disassembler
  - Create a bootable USB-stick with DFSee 14.2
  - Whatever you like (and is doable :-)

# *Who am I ?*

## Jan van Wijk

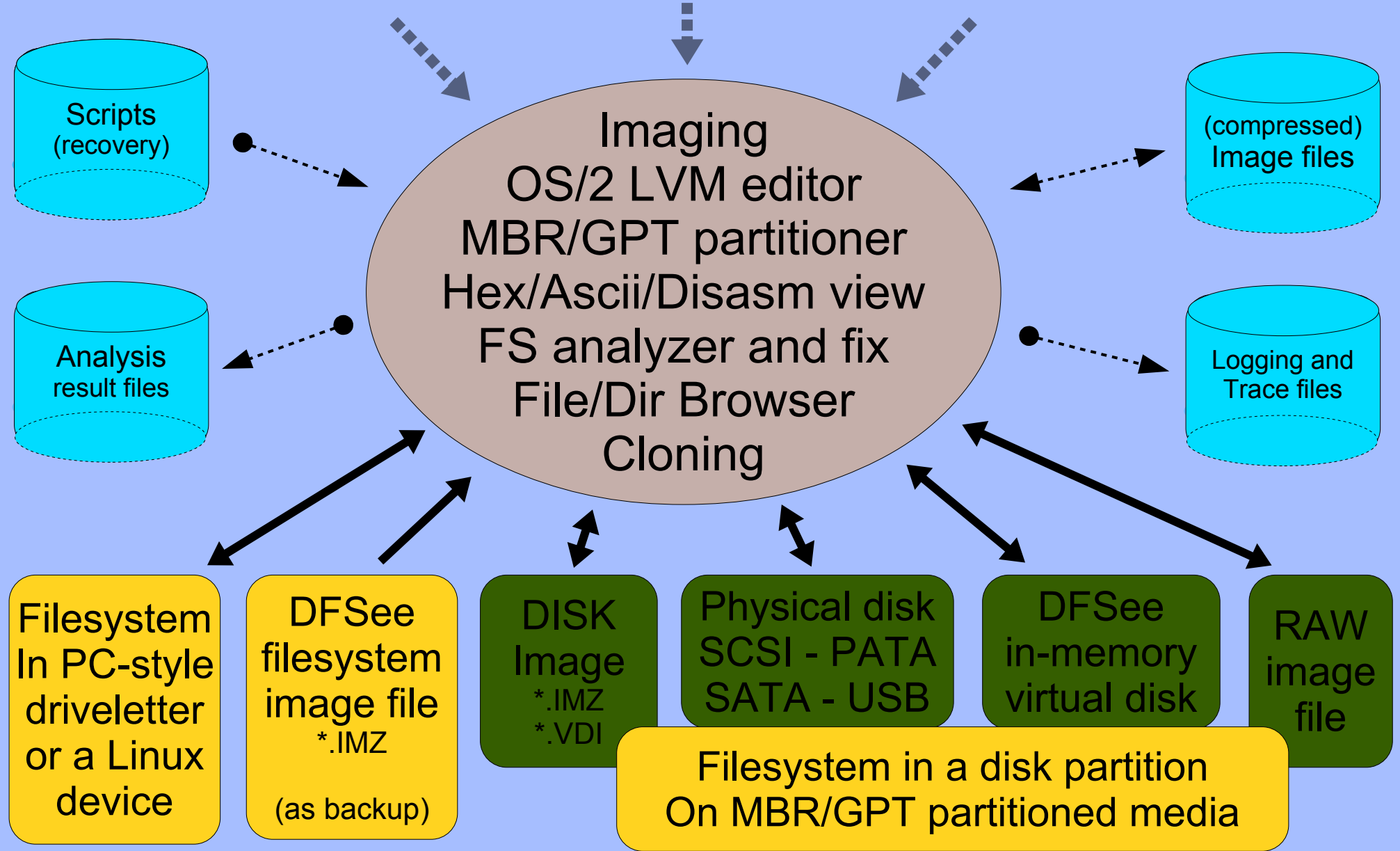
- Software Engineer, C, Rexx, Assembly, PHP
- Founded FSYS Software in 2001, developing and supporting DFSee from version 4 to 14.x
- First OS/2 experience in 1987, developing parts of OS/2 1.0 EE (Query Manager, later DB2)
- Used to be a systems-integration architect at a large bank, 500 servers and 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 similar to FDISK, LVM, PQ-Partition Magic, PQ-Drive-Image Norton-Ghost, Norton-Commander, 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
  - Browse directory/files, with copy, view, edit ...
  - Access disk/partition images incl browse (.IMZ/.VDI)
  - Disk data analysis and update (binary edit, disasm)

- Fdisk / LVM  
MBR/GPT style
- FAT(32)  
advanced-FAT
- NTFS  
Windows FS
- HPFS(386)  
OS/2 FS
- JFS  
OS/2 or Linux
- EXT2/3/4  
Linux FS
- Mac HFS+  
XFS Reiser



# *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 in MBR or GPT style
- 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



# *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

# *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
  - Integrated in the directory/file BROWSER too

# *Directory/File Browsing*

- Implements display and navigation on directory and files in most filesystems on physical disks and DFSee .IMZ or VirtualBox .VDI imagefiles
- User interface resembles filemanagers with display, selection, marking, filtering
- Actions on current/marked files, <F10> menu:
  - View contents, in ASCII, Disasm or Hexedit view
  - Edit, modifying data in the HEX-editor where possible
  - View metadata like Fnode/Inode/MFT-rec/Dir-entry
  - View OS/2 Extended attributes (HPFS, FAT, JFS)
  - Edit filename on HPFS or JFS (same length name)
  - Copy/Recover file(s) to another drive

# *Interactive binary edit/view*

- Large window with HEX and ASCII sections
- Variable nr of lines and columns, user selectable
- Integrated SEARCH facility, highlighted result
- Editing of files of any size, byte size granularity, including insert and delete at the EOF position
- X86 disassembler view modus for x86 binary code
- ASCII view modus, for text-files or binaries with text

# *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

# *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

# *Major versions*

- 1.xx 1994 HPFS viewing/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 small enhancements and fixes
- 12.x 2014 Basic/Expert menu, DUMPFS, EFAT
- 13.x 2015 Full GPT and EXT2/3/4 support
- 14.x 2016 Browse FS incl DFSee .IMZ/VirtualBox .VDI

# *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 statements like if-then-else and while, and with direct access to many DFSee internal variables ...  
  
Also see separate '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**

# 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"



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

# *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 Enhanced FAT filesystem
  - Enhanced FAT is mandatory for SD-Cards over 32Gb
  - FS drivers available on Windows, OS-X and Linux (and on many cameras supporting huge SD media)
- DFSee supports Enhanced FAT for most operations:
  - Display boot-record, space-allocation and directories
  - Use allocation info for 'smart' imaging and cloning
  - Browse, including copy (inaccessible) files to another drive

# *What is new in DFSee 13.x*

- **Full support for Guid Partition Tables (GPT)**
  - Transparent display of either MBR or GPT style partitions
  - Detailed display of GPT partition entries
  - Create, Delete and Resize of GPT partitions
  - Partition Table Editor specifically for GPT
- **Full support for Ext2, Ext3 and Ext4 filesystems**
  - Show the EXT generation being used (2, 3 or 4)
  - Display of the directory structures
  - File recovery from EXTn filesystems
  - Browsing EXTn filesystems, allowing view/edit and copy of files as well as navigating the directory tree

# *What is new in DFSee 14.x*

- **Browse directory/file structures on most filesystems**
  - Works on HPFS, JFS, FAT, NTFS and EXT/2/3/4
  - Easy navigation through the directory tree
  - View (or Edit) file contents, metadata or extended attributes
  - Copy/recover one or more files to another drive
- **Access disks/filesystems in .IMZ or .VDI images**
  - Browse a filesystem backup in a DFSee compressed image (\*.IMZ) allowing viewing or copying of file(s) and navigation through the directories
  - Mount a complete disk-backup inside such an IMZ, in DFSee allowing access to the partitions and browsing the filesystems
  - Mount a VirtualBox disk image (\*.VDI) allowing partitioning, recovery and browsing of the filesystems inside, including copying one or more files to other drives



*DFSee 14.x overview, demo - Q&A*

Questions ?

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# DFSee 14.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
- Browse a filesystem, view and copy files
- Access a DFSee .IMZ
- DFSDISK dialog
- Virtual disks, DFS -d-, add/remove media
- Recovery example, load .Pdx files
- Run a recovery script
- Using script variables and expressions