DFSee concepts and Q&A

Jan van Wijk

How to use the DFSee program more effectively by understanding its capabilities and some of the internal workings

FSYS - Software DFSee

Presentation contents

- Who am I
- DFSee functional and technical view
- DFSee architecture and working
  - Accessing 'sectors' in 'stores'
  - Different types of media
  - Virtual disks, for analysis purposes
  - Generic implementation plus FS (mode) specific
- Examples using DFSee ...

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 the latest
- 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: ***https://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, Acronis True Image 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)

What is DFSee, technical view

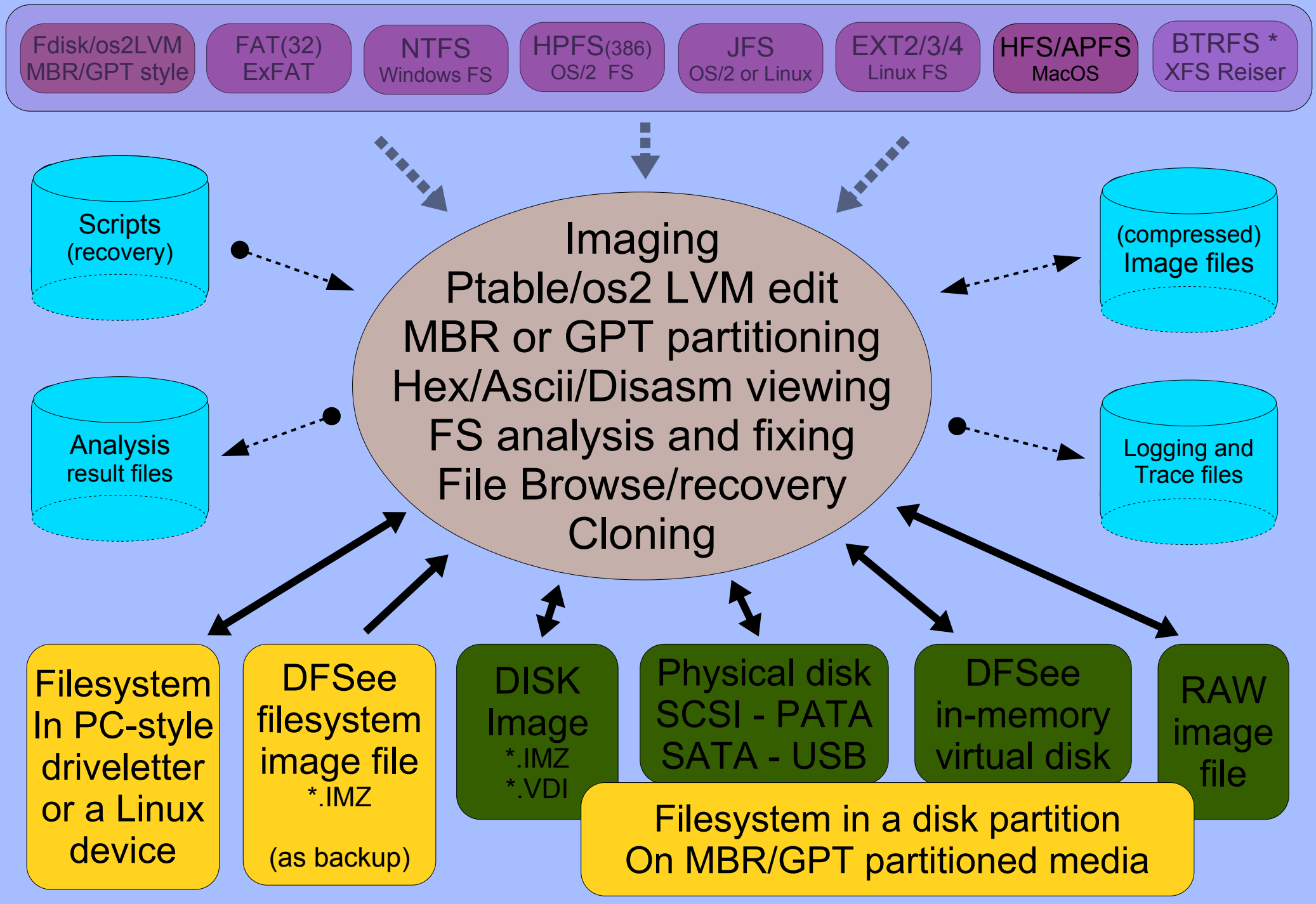
- DFSee is a tool to examine and possibly modify data on a variety of storage media
- Types of storage supported:
  - Physical disks, when access supported by the OS
  - Disk partitions on partitionable media, MBR or GPT
  - Volumes (drive letters on PC) or Devices on Linux
  - Regular files, like RAW disk images or binary files
  - DFSee compressed disk/partition images (.IMZ)
  - VirtualBox static or dynamic disk images (.VDI)
- Data can be viewed RAW or formatted for:
  - FDISK/GPT usage, partition tables, boot sectors, LVM-info
  - Filesystem structures, FAT, HPFS, NTFS, JFS, HFS, EXTn …
  - And viewed as ASCII, Disassembly or HEX (incl. editing)

DFSee versions and user interface

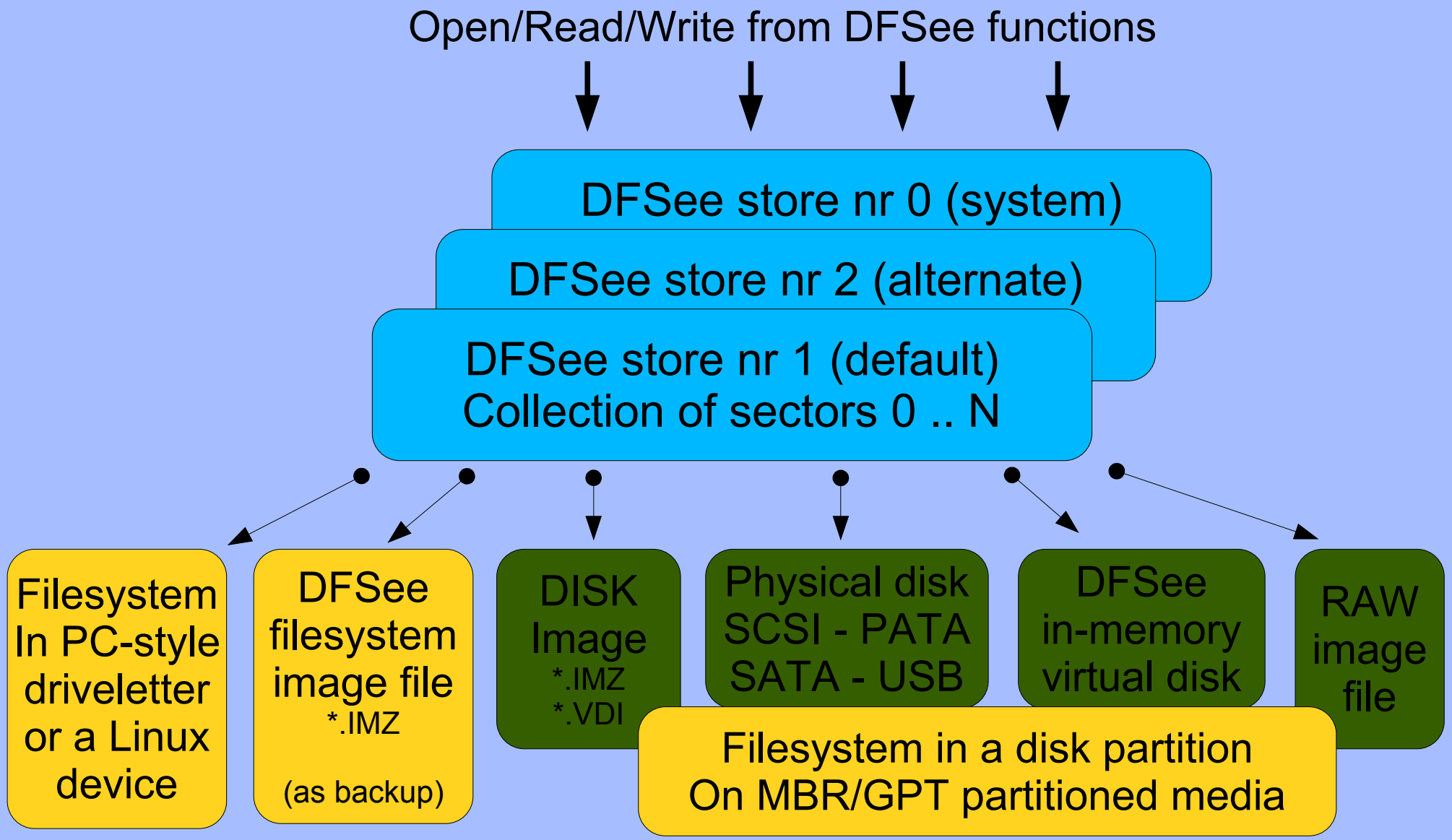
- DFSee is available for OS/2 (ArcaOS/eCS), DOS(32), Windows-XP/7/8/10, most Linux distributions and macOS (Intel 64-bit only)
- It is a non-graphical text based program, able to run in simple environments like a boot diskette, CDROM or USB-stick
- Most functions can be run from a windowed MENU interface with additional dialogs
- Even more through the command-line
- Output can go to the screen AND a logfile

DFSee architecture

- DFSee considers all storage as a collection of sectors (typical 512 bytes) called a STORE
- Many generic commands are available to work on any type of FS or disk (see DFSCMDS.TXT)
- On opening, DFSee will analyze the first sector(s) and select a suitable mode with specific commands and menu selections
- The most important modes (or filesystems) are: FDISK, FAT, HPFS, NTFS, JFS, HFS+, EXTn ...


Fdisk/os2LVM
MBR/GPT style
FAT(32)
ExFAT
NTFS
Windows FS
HPFS(386)
OS/2 FS
JFS
OS/2 or Linux
EXT2/3/4
Linux FS
HFS/APFS
MacOS
BTRFS *
XFS Reiser
Scripts
(recovery)
Analysis
result files
Imaging
Ptable/os2 LVM edit
MBR or GPT partitioning
Hex/Ascii/Disasm viewing
FS analysis and fixing
File Browse/recovery
Cloning
(compressed)
Image files
Logging and
Trace files
Filesystem
In PC-style
driveletter
or a Linux
device
DFSee
filesystem
image file
*.IMZ
(as backup)
DISK
Image
*.IMZ
*.VDI
Physical disk
SCSI - PATA
SATA - USB
DFSee
in-memory
virtual disk
RAW
image
file
Filesystem in a disk partition
On MBR/GPT partitioned media

The DFSee STORE concept



Store concept, details

- A store can be associated with a medium using an OPEN menu-item or command
- The store keeps additional information like the geometry and some statistics
  - See the ***STORE*** command/menu-item for details
- Partitions on (virtual) disks are supported by defining a non-zero 'base' sector number as the disk-sector considered to be 'sector 0'
  - See the ***BASE*** command/menu-item for details
- Operations like CLONE copy sectors between 2 stores

Virtual disks in DFSee

- Exists in MEMORY within DFSee only
- Behaves (almost) the same as a real disk

- Can be created in 2 ways:
  - By specifying a size and/or disk geometry
  - By using a set of .Pdx files as a template (often used with the DFSDISK*.* result files)

- Can be used to:
  - Learn DFSee commands and functions
  - Test recovery scenarios and scripts

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Questions ?

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