Session SM111

File Systems on WindowsNT, OpenVMS, and MS-DOS – A Structural Comparison

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Introduction

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Traditional File Systems

- ***IBM pre-VTOC***
- ***IBM VTOC***
- ***Digital Files-11 Level 1***
- ***Digital Files-11 Level 2***
- ***Microsoft MS-DOS FAT***

Attributes –

- ***Blocks Allocated Statically***
- ***Read optimized***
- ***Update in place***
- ***Files are arrays of bytes***
- ***Writes are expensive***

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NOTES

New File Systems

- ***Microsoft WindowsNT NTFS***
- ***Digital OpenVMS TNFS (Dollar)***

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IBM VTOC

- ***Single Entry Bookkeeping***
- ***No Directories***
- ***Limited Extents***

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NOTES

Digital Files-11 Level 1

- ***Double Entry Bookkeeping***
- ***Independent Directory Structure***
- ***Unlimited Extents***

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Digital Files-11 Level 2

- ***Successor to Files-11 Level 1***
- ***Increased Robustness***
- ***Volume Sets***
- ***Attribute Support defined/used***

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Microsoft MS-DOS FAT

- ***Originally Floppy based***
- ***Limited to 65K allocation units***
- ***Pseudo-Redundancy***
- ***Integral Directories***
- ***No semantics***

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Microsoft WindowsNT NTFS

- ***Logfile based recovery***
- ***Attribute support***
- ***Shutdown safe(?)***
- ***Unicode naming***
- ***cluster size <= 4096***

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Digital OpenVMS TNFS (Dollar)

- ***Transaction log is the file***
- ***Unicode naming***
- ***Presumptive read caching***
- ***Write optimized***
- ***Large write emphasis***

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Significant Sea Change

- ***File System as Backing Store***
- ***Dynamic Model***
- ***Cache Presumption***
- ***Write/Update Optimized***

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NOTES

Differences between Generations

- ***Evolutionary pressure***
- ***More dynamism***
- ***File system as store***

Questions?

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