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SUB DIRECTORY DESCRIPTION TABLE Format of SINGLIX FS1, FS2 file systems

Offset	Item	DATA	Type	Size	Description of Item
0	Directory Sign	'DDT'	Char	3 byte	TR-SINGLIX Directory Description Table
3	Reserved	XXh	Byte	1 byte	Must be 0 for Current/This DDT Version
4	Sector Size	XXh	Byte	1 byte	Bytes per Sector (FS1=512, FS2=2048) as shift count
5	Extent Allocation Type	XXh	Byte	1 byte	0 = direct, 1 = indirect
6	Number of Links	XXXXh	Word	2 byte	Number of links to directory
8	Directory Number	XXXXXXXXh	Dword	4 byte	This DDT Address of This Directory (Offset)
12	Sector Count	XXXXXXXXh	Dword	4 byte	Number of Sectors (belong to this dir, except DDT)
16	Parent Dir Number	XXXXXXXXh	Dword	4 byte	The Parent DDT Address of This Directory (Offset)
20	Parent Dir Serial	XXXXXXXXh	Dword	4 byte	The Parent Dir's Serial Number (Tick Count)
24	Directory Size	XXXXXXXXh	Dword	4 byte	The lower 4 bytes of 6 byte Directory Size.
28	Sub Directory Level	XXXXh	Word	2 byte	Sub directory level (>= 1) -high byte should be 0-
30	Attributes	1 byte	Byte	1 byte	(Dos type) Directory Attributes (0,0,A,D,V,S,H,R)
31	Extended Attributes	1 byte	Byte	1 byte	User, Group, Others Permission Flags
32*	Owner code	4 bytes	Dword	4 byte	Owner Description Table address (TR-MULTIX)
36*	Group code	4 bytes	Dword	4 byte	Group Description Table address (TR-MULTIX)
40	Country	XXh	Byte	1 byte	Language, Date, Text Format (default = 0)
41	Time Zone	XXh	Byte	1 byte	-11 to +12 (GMT = 0, default = 0)
42	Creating Century	XXh	Byte	1 byte	Century in Binary Coded Decimal (BCD) (20)
43	Creating Year	XXh	Byte	1 byte	Year in Binary Coded Decimal (BCD) (18)
44	Creating Month	XXh	Bute	1 byte	Month in Binary Coded Decimal (BCD)
45	Creating Day	XXh	Byte	1 byte	Day in Binary Coded Decimal (BCD)
46	Creating Hour	XXh	Byte	1 byte	Hour in Binary Coded Decimal (BCD)
47	Creating Minute	XXh	Byte	1 byte	Minute in Binary Coded Decimal (BCD)
48	Creating Second	XXh	Byte	1 byte	Second in Binary Coded Decimal (BCD)
49	C. Time Mode	XXh	Byte	1 byte	0 = Standard Time, 1 = Daylight Saving
50	Last Modif. Date	XXXXXXXXh	Dword	4 byte	The Last Modification/Write Date (BCD)
54	Last Modif. Time	XXXXXXh	Byte	3 byte	The Last Modification/Write Time (BCD)
57	L. M. Time Mode	XXh	Byte	1 byte	0 = Standard, 1 = Daylight Saving Time
58	Directory Serial	XXXXXXXXh	Dword	4 byte	Serial number (tick count) of this directory
62	Long Name Length	XXh	Byte	1 byte	Length of unicode directory name if available
63	Directory Name Type	XXh	Byte	1 byte	0 = Default, 12 = Msdos, 14 = Unix, 64 = Singlix
64	Directory Name	<DirectoryName>	Char	64 byte	64 byte full or zero terminated Directory Name
128	Extents Table	16*(4+4) bytes	Dword	128 byte	Table of 16 direct or indirect extent addresses
256	Unicode Dir Name	<Long Dir Name>	Byte	256 byte	Unicode Directory Name if Offset 62 > 0
512**	Reserved	?	Byte	1536 byte	Optional/Reserved Area for FS2 Directories/Files

* Used by TR-MULTIX (Multiuser, Multitasking) Operating System, only!
** 1536 byte extra description for 2048 bytes per sector File System (FS2), only ! Optional !

NOTE: Erased/Deleted Directory Sign: 'DDE', 'E' at offset 2 instead of 'T'. (Parent Dir's Entry: FFFFFFFFh is erased entry, 0 is end of directory entries. Other 32 bit dir. entry numbers are the FDT/DDT addresses.)

Number of links is normally 1. But the sub directory is linked in other directories, number of links will be > 1.
If directory will be erased from it's parent directory (while number of links > 1), parent directory number will be FFFFFFFFh.
But directory will not be deleted until number of links becomes 0. (every deleting decreases number of links).
(Only an empty directory can be deleted.. To delete a directory, its size -number of the directory entries- must be 0.)

Parent Dir. Serial used for that purpose: When a dir or file is deleted, it will be removed from parent directory entries by replacing child directory or file number to FFFFFFFFh = deleted entry sign. And, it will be located in UNDELETE Directory as a new deleted file entry. When user want to undelete this file/dir, if parent directory serial number same with in the parent directory descriptor table (as number) declared in child directory descriptor table, the deleted directory or file will be restored in the parent directory. Directory serial number is just a tick count which always different by the computer's timer ticks. (as like as volume serial number.)

Singlix FS file system uses extents which are contiguous/sequental sectors (like as variable size clusters) for file allocation on disk volume (partition). Length (sector count) of an extent may be 1 to File Size / Sector Size sectors. At the beginning, 16 direct extent fields/rows are used in FDT (in Extent Table space). Every direct extent field/row is 2 dwords. The 1st one is for file offset (as sector) and the 2nd is disk sector address (offset). When file grows beyond 16 extents . Indirect extents table is used. And 16 direct extent entries are changed to 16 indirect table entries. Each indirect table contains entries for 64 direct extents (if sector size is 512 bytes).

EXTENDED ATTRIBUTES byte:

Bit 0 = Owner's Read Only Flag [0 = Writable file, 1 = Read only file]
Bit 1 = Owner's Executable File Flag (1 = executable file -in multitasking mode-)
Bit 2 = Group User's Invisible Flag (0=No, 1=Yes) [1 = This file is not visible except the owner]
Bit 3 = Group User's Read Only Flag (0=No, 1=Yes) [The result can be 'Writable' if Bit 0 is 0]
Bit 4 = Group User's Executable File Flag (1= executable by group user if also Bit 1 is 1)
Bit 5 = Other User's Invisible Flag (0=No, 1=Yes) [1 = This file is not visible except the group]
Bit 6 = Other User's Read Only Flag (0=No, 1=Yes) [The result can be 'Writable' if Bit 0 & Bit 3 is 0]
Bit 7 = Other User's Executable File Flag (1= executable by other users if also Bit 1 & Bit 4 is 1)

(DOS) BASIC ATTRIBUTES byte:

Bit 0 = Read Only Flag (R)
Bit 1 = Hidden (Invisible) Flag (H)
Bit 2 = System File Flag (S)
Bit 3 = Volume Flag (V)
Bit 4 = Directory Flag (D)
Bit 5 = Archive Flag (A)
Bit 6 = Reserved (0)
Bit 7 = Reserved (0)

DIRECTORY DATA (ENTRY) FORMAT:

Each directory entry is 1 dword (4 bytes) that points to the description table address of a file or directory.
If a directoy entry contains the value 0FFFFFFFFh, it is a deleted entry and should be skipped during the directory search.
If a directory entry contains a 0 (zero), it is the end of the directory entries and the directory search should be stopped there.