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| PROJECT: SINGLIX Operating System   Issue: 4    Revision: 14   Date: 07/01/2018  OWNER: ERDOĞAN TAN / Istanbul / Turkiye | | | | | |
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| **ROOT DIRECTORY DESCRIPTION TABLE format of  SINGLIX FS1,FS2 file systems** | | | | | |
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| **Offset** | **Item** | **DATA** | **Type** | **Size** | **Description of Item** |
| 0 | Directory Sign | ‘DDT’ | Char | 3 byte | TR-SINGLIX Directory Descriptor |
| 3 | Reserved | XXh | Byte | 1 byte | Must be 0 for current/this RDT version |
| 4 | Sector Size | XXXXh | Word | 2 byte | Bytes per Sector (FS1=512, FS2=2048) |
| 6 | RDT Number | XXXXh | Word | 2 byte | RDT (Sequence) Number of Root Directory |
| 8 | Directory Number | XXXXXXXXh | Dword | 4 byte | The 1st DDT Address of Root Directory (Offset) |
| 12 | Next RDT Number | XXXXXXXXh | Dword | 4 byte | RDT Address of the Next Section (Offset) |
| 16 | Sector Count | XXXXXXXXh | Dword | 4 byte | Number of Sectors in this section |
| 20 | Beginning Sector | XXXXXXXXh | Dword | 4 byte | Volume Beginning Sector (LBA) Addr. |
| 24 | Parent Dir Serial | FFFFFFFFh | Dword | 4 byte | Must be FFFFFFFFh for root directory. |
| 28 | Volume Serial No. | XXXXXXXXh | Dword | 4 byte | Volume (Root Dir.) Serial No. (Tick Count) |
| 32 | Sub Dir Level | 00h | Byte | 1 byte | Sub Directory Level = 0 for root directory |
| 33 | Reserved | 00h | Byte | 1 byte | Must be 0 for current RDT version |
| 34 | Attributes | 1 byte | Byte | 1 byte | (Dos type) Directory Attributes (0,0,A,D,V,S,H,R) |
| 35 | Extended Attributes | 1 byte | Byte | 1 byte | User, Group, Others Permission Flags |
| 36\* | Reserved | 8 bytes | Byte | 8 byte | Reserved for TR-MULTIX (must be 0) |
| 44 | Root Directory Sign | ‘RT’ | Word | 2 byte | ‘RT’ as Root Directory Identifier |
| 46 | Country | XXh | Byte | 1 byte | Language, Date, Text Format (default = 0) |
| 47 | Time Zone | XXh | Byte | 1 byte | -11 to +12  (GMT = 0, default = 0) |
| 48 | Creating Year | XXXXh (YYCC) | Word | 2 byte | Year in Binary Coded Decimal (BCD) (20h, 18h) |
| 50 | Creating Month | XXh | Byte | 1 byte | Month in Binary Coded Decimal (BCD) |
| 51 | Creating Day | XXh | Byte | 1 byte | Day in Binary Coded Decimal (BCD) |
| 52 | Creating Hour | XXh | Byte | 1 byte | Hour in Binary Coded Decimal (BCD) |
| 53 | Creating Minute | XXh | Byte | 1 byte | Minute in Binary Coded Decimal (BCD) |
| 54 | Creating Second | XXh | Byte | 1 byte | Second in Binary Coded Decimal (BCD) |
| 55 | C. Time Mode | XXh | Byte | 1 byte | 0 = Standard Time, 1 = Daylight Saving |
| 56 | Last Modif. Date | XXXXXXXXh | Dword | 4 byte | The Last Modification/Write Date (BCD) |
| 60 | Last Modif. Time | XXXXXXh | Byte | 3 byte | The Last Modification/Write Time (BCD) |
| 63 | L. M. Time Mode | XXh | Byte | 1 byte | 0 = Standard, 1 = Daylight Saving Time |
| 64 | Volume Name | 64 Chars | Char | 64 byte | FS Volume Name String (Zero Padded) |
| 128 | Reserved | ? | Byte | 128 byte | 128 byte Reserved/Optional Data Field |
| 256 | Reserved | ? | Byte | 256 byte | 256 byte Reserved/Optional Data Field |
| 512\*\* | Reserved | ? | Byte | 1536 byte | Optional/Reserved Area for FS2 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: Root Dir. Entry: FFFFFFFFh is erased entry, 0 is end of root dir. entries. Root dir. entries are the 1st FDT or DDT addresses of files or sub dirs. (32 bit sector offset number which is > 0 and  < FFFFFFFFh)    Root directory is the parent directory of all sub directory level 1 directories (of course if they are recorded in root directory entries.) Directory Description Table Offset 33 is for Sub Directory Level. The ZERO value at RDT Offset 33 shows it is ROOT directory (also Parent Dir Serial Number 0FFFFFFFFh and ‘RT’ identifier in root directory signature field shows that). The Operating System Software/Kernel or a program which uses this SINGLIX FS, must check the letter “DDT” letters at the beginning of directory descriptor table and then 0FFFFFFFFh in Parent Dir Serial Number field and 0 in Sub Directory Level field and 'RT' in Root Directory Identifier field. (At Offset 0, “D” is for directories, “F” is for files. “DE” shows that directory/files is actually deleted, cannot be undeleted because of it is removed from UNDELETE directory. And Disk Allocation Table shows the sectors of that directory/file as DELETED/FreeForUse.)  .  Root/Parent Dir. Serial used for that purpose: When a dir or file is deleted, it will be removed from root/parent dir 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, if parent dir serial number same with in the parent directory descriptor table (as number) declared in child dir/file descriptor table, the deleted directory or file will be restored in the root directory. Directory serial number is just a tick count which always different by the computer’s timer ticks. (as like as volume serial number.)    That checkup is performed for preventing accidental/wrong restore operations. Because, a directory can be deleted, then, a new directory description table can be created on same disk sector, only serial number check (because of serial number is the timer tick count) will provide determining of that DDT is actually the parent directory’s description table or a new directory description table. Also, Root Directory Serial Number is (same with) Volume (File System) Serial Number; Root Directory Serial Number is not needed for undelete procedure. (There is only one root directory in a FS and it cannot be deleted.) | | | | | |