PROJECT: SINGLIX Operating System Issue: 7 Revision: 0 Date: 31/05/2025 OWNER: ERDOĞAN TAN / Istanbul / Turkiye

DIRECT EXTENT TABLE:

FDT/DDT Offset 5 – Extent Allocation Type = 0

	SECTOR INDEX	EXTENT ADDRESS
FDT/DDT Offset 128:	Extent 0 – Start Sector = 0	Extent 0 – LBA
FDT/DDT Offset 136:	Extent 1 – Start Sector	Extent 1 – LBA
FDT/DDT Offset 144:	Extent 2 – Start Sector	Extent 2 – LBA
FDT/DDT Offset 152:	Extent 3 – Start Sector	Extent 3 – LBA
FDT/DDT Offset 160:	Extent 4 – Start Sector	Extent 4 – LBA
FDT/DDT Offset 168:	Extent 5 – Start Sector	Extent 5 – LBA
FDT/DDT Offset 176:	Extent 6 – Start Sector	Extent 6 – LBA
FDT/DDT Offset 184:	Extent 7 – Start Sector	Extent 7 – LBA
FDT/DDT Offset 224:	Extent 12 – Start Sector	Extent 12 – LBA
FDT/DDT Offset 232:	Extent 13 – Start Sector	Extent 13 – LBA
FDT/DDT Offset 240:	Extent 14 – Start Sector	Extent 14 – LBA
FDT/DDT Offset 248:	Extent 15 – Start Sector	Extent 15 – LBA

INDIRECT EXTENT TABLE:

FDT/DDT Offset 5 – Extent Allocation Type = 1

	INDIRECT SECTOR INDEX	DIRECT EXTENT TABLE ADDRESS
FDT/DDT Offset 128:	Direct Table 1 – Start Sector = 0	Direct Table 1 – LBA
FDT/DDT Offset 136:	Direct Table 2 – Start Sector	Direct Table 2 – LBA
FDT/DDT Offset 144:	Direct Table 3 — Start Sector	Direct Table 3 – LBA
FDT/DDT Offset 152:	Direct Table 4 – Start Sector	Direct Table 4 – LBA
FDT/DDT Offset 232:	Direct Table 14 – Start Sector	Direct Table 14 – LBA
FDT/DDT Offset 240:	Direct Table 15 – Start Sector	Direct Table 15 – LBA
FDT/DDT Offset 248:	Direct Table 16 – Start Sector	Direct Table 16 – LBA

DOUBLE INDIRECT EXTENT TABLE:

FDT/DDT Offset 5 – Extent Allocation Type = 2

	DOUBLE INDIRECT SECTOR INDEX	DIRECT EXTENT TABLE ADDRESS
FDT/DDT Offset 128:	Indirect Table 1 – Start Sector = 0	Indirect Table 1 – LBA
FDT/DDT Offset 136:	Indirect Table 2 – Start Sector	Indirect Table 2 – LBA
FDT/DDT Offset 144:	Indirect Table 3 – Start Sector	Indirect Table 3 – LBA
FDT/DDT Offset 152:	Indirect Table 4 – Start Sector	Indirect Table 4 – LBA
FDT/DDT Offset 232:	Indirect Table 14 – Start Sector	Indirect Table 14 – LBA
FDT/DDT Offset 240:	Indirect Table 15 – Start Sector	Indirect Table 15 – LBA
FDT/DDT Offset 248:	Indirect Table 16 – Start Sector	Indirect Table 16 – LBA

NOTES:

- If the extent (starting sector) address is 0, it means the end of the file.
- There are at most 16 direct extents, each containing at least 1 consecutive sector.
- An extent is pointed to using 2 dwords. The 1st is for the starting sector sequence (index) number and the 2nd is for the starting sector address of the extent.
- An empty extent contains zero in it's pointers (at least the address).
- Extents are designed using the sector unit, not the cluster. (Extents are already variable-sized clusters. They contain consecutive sectors.)
- Using the starting sector number instead of the sector count makes it a bit easier to check if the sector is in extent. (This is why sector counts are not used in the table.)
- An indirect extent table contains 512/8 = 64 pairs of direct extent (dword) pointers.
- It is possible to use 1024 extents with indirect extent tables. (16*64)
- A double indirect extent table contains 512/8 = 64 pairs of indirect table (dword) pointers.
- It is possible to use 65536 extents with double indirect extent tables. (16*64*64)

TRIPLE INDIRECT EXTENT TABLE:

FDT/DDT Offset 5 - Extent Allocation Type = 3

	TRIPLE INDIRECT SECTOR INDEX	INDIRECT EXTENT TABLE ADDRESS
FDT/DDT Offset 128:	Double Indirect Table 1 – Start Sector = 0	Double Indirect Table 1 – LBA
FDT/DDT Offset 136:	Double Indirect Table 2 – Start Sector	Double Indirect Table 2 – LBA
FDT/DDT Offset 144:	Double Indirect Table 3 – Start Sector	Double Indirect Table 3 – LBA
FDT/DDT Offset 152:	Double Indirect Table 4 – Start Sector	Double Indirect Table 4 – LBA
FDT/DDT Offset 232:	Double Indirect Table 14 – Start Sector	Double Indirect Table 14 – LBA
FDT/DDT Offset 240:	Double Indirect Table 15 – Start Sector	Double Indirect Table 15 – LBA
FDT/DDT Offset 248:	Double Indirect Table 16 – Start Sector	Double Indirect Table 16 – LBA

^{*} It is possible to use 1048576 extents with triple indirect extent tables. (16*64*64)