

# Theory

## Virtual Addressing

VA	Virtual Address
RVA	Relative Virtual Address VA2-VA1
Offset	Difference Virtual - Physical Address (?)

## PE Files (32 bit)

```

IMAGE_DOS_HEADER
+00      WORD  e_magic  Magic Number MZ ($5A4D)      IMAGE_DOS_SIGNATURE
+02      WORD  e_cblp  Bytes on last page of file
+04      WORD  e_cp    Pages in file
+06      WORD   e_crlc  Relocations
+08      WORD   e_cparhdr  Size of header in paragraphs
+0A (10) WORD   e_minalloc  Minimum extra paragraphs needed
+0C (12) WORD   e_maxalloc  Maximum extra paragraphs needed
+0E (14) WORD   e_ss     Initial (relative) SS value
+10 (16) WORD   e_sp     Initial SP value
+12 (18) WORD   e_csum   Checksum
+14 (20) WORD   e_ip     Initial IP value
+16 (22) WORD   e_cs     Initial (relative) CS value
+18 (24) WORD   e_lfarlc  File address of relocation table
+1A (26) WORD   e_ovno   Overlay number
+1C (28) Array[4] of WORD  e_res     Reserved words
+24 (36) WORD   e_oemid   OEM identifier (for e_oeminfo)
+26 (28) WORD   e_oeminfo OEM information; e_oemid specific
+28 (40) Array[10] of WORD e_res2    Reserved words
+3C (60) DWORD  e_lfanew  File address of new exe header
IMAGE_NT_HEADERS

```

```

typedef struct _IMAGE_NT_HEADERS {
    DWORD          Signature;
    IMAGE_FILE_HEADER FileHeader;
    IMAGE_OPTIONAL_HEADER OptionalHeader;
} IMAGE_NT_HEADERS, *PIAMGE_NT_HEADERS;

```

```

typedef struct _IMAGE_FILE_HEADER {
    WORD  Machine;
    WORD  NumberOfSections;
    DWORD TimeDateStamp;
    DWORD PointerToSymbolTable;
    DWORD NumberOfSymbols;
    WORD  SizeOfOptionalHeader;
    WORD  Characteristics;
} IMAGE_FILE_HEADER, *PINMAGE_FILE_HEADER;

```