Entire MBR record in hex and ASCII

```
OFFSET 0 1 2 3  4 5 6 7  8 9 A B  C D E F  *0123456789ABCDEF*
000000 fa33c08e d0bc007c 8bf45007 501ffbfc *.3.....|..P.P...*
000010 bf0006b9 0001f2a5 ea1d0600 00bebe07 *................*
000020 b304803c 80740e80 3c00751c 83c610fe *.....t....u.....*
000030 cb75efcd 188b148b 4c028bee 83c610fe *.u......L.......*
000040 cb741a80 3c0074f4 be8b06ac 3c00740b *.t....t.......t.*
000050 56bb0700 b40ecd10 5eebf0eb febf0500 *V.......^.......*
000060 bb007cb8 010257cd 135f730c 33c0cd13 *..|...W.._s.3...*
000070 4f75edbe a306ebd3 bec206bf fe7d813d *Ou..........}.=*
000080 55aa75c7 8bf5ea00 7c000049 6e76616c *U.u.....|..Inval*
000090 69642070 61727469 74696f6e 20746162 *id partition tab*
0000a0 6c650045 72726f72 206c6f61 64696e67 *le.Error loading*
0000b0 206f7065 72617469 6e672073 79737465 * operating syste*
0000c0 6d004d69 7373696e 67206f70 65726174 *m.Missing operat*
0000d0 696e6720 73797374 656d0000 00000000 *ing system......*
0000e0 00000000 00000000 00000000 00000000 *................*
0000f0 TO 0001af SAME AS ABOVE
0001b0 00000000 00000000 00000000 00008001 *................*
0001c0 0100060d fef83e00 00000678 0d000000 *..........x....*
0001d0 00000000 00000000 00000000 00000000 *................*
0001e0 00000000 00000000 00000000 00000000 *................*
0001f0 00000000 00000000 00000000 000055aa *..............U.*
```

Disassembly of the MBR

This sector is initially loaded into memory at 0000:7c00 but it immediately relocates itself to 0000:0600.

```
                BEGIN:                          NOW AT 0000:7C00, RELOCATE

0000:7C00 FA            CLI                       disable int's
0000:7C01 33C0          XOR     AX,AX             set stack seg to 0000
0000:7C03 8ED0          MOV     SS,AX
0000:7C05 BC007C        MOV     SP,7C00           set stack ptr to 7c00
0000:7C08 8BF4          MOV     SI,SP             SI now 7c00
0000:7C0A 50            PUSH    AX
0000:7C0B 07            POP     ES                ES now 0000:7c00
0000:7C0C 50            PUSH    AX
0000:7C0D 1F            POP     DS                DS now 0000:7c00
0000:7C0E FB            STI                       allow int's
0000:7C0F FC            CLD                       clear direction
0000:7C10 BF0006        MOV     DI,0600           DI now 0600
0000:7C13 B90001        MOV     CX,0100           move 256 words (512
bytes)
0000:7C16 F2            REPNZ                     move MBR from 0000:7c00
0000:7C17 A5            MOVSW                        to 0000:0600
0000:7C18 EA1D060000    JMP     0000:061D         jmp to NEW_LOCATION

        NEW_LOCATION:                           NOW AT 0000:0600
```

```
0000:061D BEBE07      MOV     SI,07BE           point to first table
entry
0000:0620 B304        MOV     BL,04             there are 4 table
entries

        SEARCH_LOOP1:                         SEARCH FOR AN ACTIVE ENTRY

0000:0622 803C80      CMP     BYTE PTR [SI],80  is this the active
entry?
0000:0625 740E        JZ      FOUND_ACTIVE      yes
0000:0627 803C00      CMP     BYTE PTR [SI],00  is this an inactive
entry?
0000:062A 751C        JNZ     NOT_ACTIVE        no
0000:062C 83C610      ADD     SI,+10            incr table ptr by 16
0000:062F FECB        DEC     BL                decr count
0000:0631 75EF        JNZ     SEARCH_LOOP1      jmp if not end of table
0000:0633 CD18        INT     18                GO TO ROM BASIC

        FOUND_ACTIVE:                         FOUND THE ACTIVE ENTRY

0000:0635 8B14        MOV     DX,[SI]           set DH/DL for INT 13
call
0000:0637 8B4C02      MOV     CX,[SI+02]        set CH/CL for INT 13
call
0000:063A 8BEE        MOV     BP,SI             save table ptr

        SEARCH_LOOP2:                         MAKE SURE ONLY ONE ACTIVE
ENTRY

0000:063C 83C610      ADD     SI,+10            incr table ptr by 16
0000:063F FECB        DEC     BL                decr count
0000:0641 741A        JZ      READ_BOOT         jmp if end of table
0000:0643 803C00      CMP     BYTE PTR [SI],00  is this an inactive
entry?
0000:0646 74F4        JZ      SEARCH_LOOP2      yes

          NOT_ACTIVE:                         MORE THAN ONE ACTIVE ENTRY
FOUND

0000:0648 BE8B06      MOV     SI,068B           display "Invld prttn
tbl"

         DISPLAY_MSG:                         DISPLAY MESSAGE LOOP

0000:064B AC          LODSB                     get char of message
0000:064C 3C00        CMP     AL,00             end of message
0000:064E 740B        JZ      HANG              yes
0000:0650 56          PUSH    SI                save SI
0000:0651 BB0700      MOV     BX,0007           screen attributes
0000:0654 B40E        MOV     AH,0E             output 1 char of
message
0000:0656 CD10        INT     10                   to the display
0000:0658 5E          POP     SI                restore SI
0000:0659 EBF0        JMP     DISPLAY_MSG       do it again

                HANG:                         HANG THE SYSTEM LOOP
```

```
0000:065B EBFE        JMP     HANG              sit and stay!

          READ_BOOT:                          READ ACTIVE PARITION BOOT
RECORD

0000:065D BF0500      MOV     DI,0005           INT 13 retry count

          INT13RTRY:                          INT 13 RETRY LOOP

0000:0660 BB007C      MOV     BX,7C00
0000:0663 B80102      MOV     AX,0201           read 1 sector
0000:0666 57          PUSH    DI                save DI
0000:0667 CD13        INT     13                read sector into
0000:7c00
0000:0669 5F          POP     DI                restore DI
0000:066A 730C        JNB     INT13OK           jmp if no INT 13
0000:066C 33C0        XOR     AX,AX             call INT 13 and
0000:066E CD13        INT     13                   do disk reset
0000:0670 4F          DEC     DI                decr DI
0000:0671 75ED        JNZ     INT13RTRY         if not zero, try again
0000:0673 BEA306      MOV     SI,06A3           display "Errr ldng
systm"
0000:0676 EBD3        JMP     DISPLAY_MSG       jmp to display loop

            INT13OK:                          INT 13 ERROR

0000:0678 BEC206      MOV     SI,06C2             "missing op sys"
0000:067B BFFE7D      MOV     DI,7DFE             point to signature
0000:067E 813D55AA    CMP     WORD PTR [DI],AA55  is signature
correct?
0000:0682 75C7        JNZ     DISPLAY_MSG         no
0000:0684 8BF5        MOV     SI,BP               set SI
0000:0686 EA007C0000  JMP     0000:7C00           JUMP TO THE BOOT
SECTOR
                                                     WITH SI POINTING
TO
                                                     PART TABLE ENTRY

Messages here.

0000:0680 ........ ........ ......49 6e76616c *           Inval*
0000:0690 69642070 61727469 74696f6e 20746162 *id partition tab*
0000:06a0 6c650045 72726f72 206c6f61 64696e67 *le.Error loading*
0000:06b0 206f7065 72617469 6e672073 79737465 * operating syste*
0000:06c0 6d004d69 7373696e 67206f70 65726174 *m.Missing operat*
0000:06d0 696e6720 73797374 656d00.. ........ *ing system.     *

Data not used.

0000:06d0 ........ ........ ......00 00000000 *           .....*
0000:06e0 00000000 00000000 00000000 00000000 *................*
0000:06f0 00000000 00000000 00000000 00000000 *................*
0000:0700 00000000 00000000 00000000 00000000 *................*
0000:0710 00000000 00000000 00000000 00000000 *................*
0000:0720 00000000 00000000 00000000 00000000 *................*
0000:0730 00000000 00000000 00000000 00000000 *................*
```

```
0000:0740 00000000 00000000 00000000 00000000 *................*
0000:0750 00000000 00000000 00000000 00000000 *................*
0000:0760 00000000 00000000 00000000 00000000 *................*
0000:0770 00000000 00000000 00000000 00000000 *................*
0000:0780 00000000 00000000 00000000 00000000 *................*
0000:0790 00000000 00000000 00000000 00000000 *................*
0000:07a0 00000000 00000000 00000000 00000000 *................*
0000:07b0 00000000 00000000 00000000 0000.... *............    *

The partition table starts at 0000:07be.  Each partition table
entry is 16 bytes.  This table defines a single primary partition
which is also an active (bootable) partition.

0000:07b0 ........ ........ ........ ....8001 *            ....*
0000:07c0 0100060d fef83e00 00000678 0d000000 *..........x....*
0000:07d0 00000000 00000000 00000000 00000000 *................*
0000:07e0 00000000 00000000 00000000 00000000 *................*
0000:07f0 00000000 00000000 00000000 0000.... *............    *

The last two bytes contain a 55AAH signature.

0000:07f0 ........ ........ ........ ....55aa *..............U.*
```

Layout of a standard master boot record

Address	Description
0x0000	Code Area
0x018A	Four 9 byte primary partition table entries (optional IBM extensions to the MBR Partition Table scheme)
0x01B8	4 byte disk signature (optional)
0x01BE	Four 16 byte primary partition table entries (standard MBR Partition Table scheme)
0x01FE	2 byte MBR signature (0x55AA)