CP/M 2.2 BIOS Function Calls

Basic Input/Output System - Quick Reference Guide

CP/M 2.2 BIOS (Basic Input/Output System) provides hardware-dependent low-level I/O routines. The BIOS is located at the top of memory and consists of a jump table with 3-byte entries (JMP instructions) to the actual routines. These functions are called by BDOS and can be called directly by applications, though this is less portable. The BIOS base address can be found at memory location 0x0001 (warm boot vector).

Calling Convention: BIOS functions are called via JMP instructions in the jump table. Each entry is 3 bytes apart. To call a BIOS function, calculate the address as BIOS_BASE + OFFSET, where BIOS_BASE is typically found at address 0x0001. All registers not used for return values are preserved.

Offset	Name	Input	Output	Description
0	**BOOT**	None	None	Cold start - initialize system and load CCP/BDOS
3	**WBOOT**	None	None	Warm boot - reload CCP and reinitialize system
6	**CONST**	None	A=status	Console status (A=0xFF if char ready, A=0x00 if no char)
9	**CONIN**	None	A=character	Console input - read character from keyboard
12	**CONOUT**	C=character	None	Console output - write character to screen
15	**LIST**	C=character	None	List output - write character to printer
18	**PUNCH**	C=character	None	Punch output - write character to punch device
21	**READER**	None	A=character	Reader input - read character from reader device
24	**HOME**	None	None	Home disk head - move to track 0
27	**SELDSK**	C=disk, E=flag	HL=DPH addr	Select disk drive (C=0 for A:, etc; E=0/1 for logged; HL=0 if error)
30	**SETTRK**	BC=track	None	Set track number for subsequent read/write
33	**SETSEC**	BC=sector	None	Set sector number for subsequent read/write
36	**SETDMA**	BC=address	None	Set DMA address for data transfer
39	**READ**	None	A=status	Read selected sector (A=0 if OK, A=1 if error)
42	**WRITE**	C=deblock	A=status	Write selected sector (C=0=normal, 1=directory, 2=first block; A=0 if OK, A=1 if error)

Offset	Name	Input	Output	Description
45	**LISTST**	None	A=status	List status (A=0xFF if ready, A=0x00 if not ready)
48	**SECTRAN**	BC=sector, DE=table	HL=phys sec	Sector translation (BC=logical, DE=translate table, HL=physical sector)

Detailed Notes:

BOOT vs WBOOT: BOOT performs a complete system initialization including hardware setup. WBOOT reloads only the CCP (Console Command Processor) and reinitializes for user interaction.

Console Functions: CONST checks if a character is available. CONIN waits for and returns a character. CONOUT displays a character. These are the primary user interface routines.

Peripheral Devices: LIST sends to printer, PUNCH sends to paper tape punch, READER reads from paper tape reader. LISTST checks printer status.

Disk Operations: SELDSK selects the drive and returns DPH (Disk Parameter Header) address. HOME moves to track 0. SETTRK/SETSEC position for I/O. SETDMA sets the data buffer. READ/WRITE perform actual I/O.

SECTRAN: Translates logical to physical sector numbers for disk skewing optimization. If no translation is needed, return HL=BC.

DPH Structure: Contains pointers to translation table, scratch areas, directory buffer, DPB (Disk Parameter Block), checksum vector, and allocation vector.

Write Types: Type 0=normal data, Type 1=directory sector (needs special handling), Type 2=first block of new extent (may need allocation).

Portability: BIOS is the hardware-dependent layer. Modifying BIOS allows CP/M to run on different hardware without changing BDOS or CCP.

Example - Calling BIOS from Assembly:

```
; Get BIOS base address
LHLD 0001H ; Get warm boot address
LXI D,0009H ; Offset to CONIN
DAD D ; HL = CONIN address
CALL HL ; Call CONIN (returns char in A)
```