# DOSKRNL

DOSKRNL is a specialized DOS kernel changed to support DOS in MVM.

## Startup

On DOSKRNL start SS:BP contains pointer to the area info data structure which contains initial information for DOS kernel. Exact structure format not know, know some info produced by VBIOS. SS:SP contains stack pointer (initially point to area after init structure, size around 800 bytes)

| Offset | Size | Description |
|---|---|---|
| 0 | 2 | First free segment after DOSKRNL |
| 2 | 2 | Size of memory - first free segment (paragraphs) |
| 4 | 2 | Size of init area (paragraphs) |
| 6 | 2 | Value of BREAK setting |
| 8 | 2 | Value of DOS setting |
| 10 | 4 | Far pointer to list of DOS DEVICE setting |
| 14 | 4 | Far pointer to SHELL (filepath only) |
| 18 | 4 | Far pointer to SHELL (arguments) |
| 22 | 4 | Far pointer to linked list of VDD |
| 26 | 1 | Current drive (1-A, 2-B, 3-C, ...) |
| 27 | 1 | Boot drive (1-A, 2-B, 3-C, ...) |
| ???? | ??? | ???? |

Memory map on DOSKRNL start:

| | |
|---|---|
| Init area | [BP+0+BP+2-BP+4]:0 |
| Free | [BP+0]:0 |
| DOSKRNL | ???:0 |
| CMOS Data | 40:0 |
| Interrupt vectors | 0:0 |

As in most DOS kernels, DOSKRNL moves initialization code to higher memory. But uses init structure, not BIOS INT 12h, for memory information.

VDDs linked list (in init area) in standard DOS Device drivers format

| offset | Size | Description |
|---|---|---|
| 0 | 4 | Pointer to next device (Must be set to -1 for last device) |
| 4 | 2 | Attributes |
| | | Bit 15 = 1 if char device 0 if blk |
| | | if bit 15 is 1 |
| | | Bit 0 = 1 if Current sti device |
| | | Bit 1 = 1 if Current sto output |
| | | Bit 2 = 1 if Current NUL device |
| | | Bit 3 = 1 if Current CLOCK dev |
| | | Bit 4 = 1 if SPECIAL |
| | | Bit 14 is the IOCTL bit |
| | | Bit 13 is the NON-IBM-FORMAT bit |

| offset | Size | Description |
|---|---|---|
| 6 | 2 | Pointer to Device strategy entry point |
| 8 | 2 | Pointer to Device interrupt entry point |
| 10 | 8 | character device name field. Character devices set a device name. For block devices the first byte is the number of units |

DOSKRNL search and initialize XMS driver and moves some parts to HMA. Most other initialization things is same. DOSKRNL initializes standard device drivers and adds and initializes VDDs, passed via init structure. Some things (at least COMMAND.COM, device drivers) also passed via init structure. not CONFIG.SYS. At the present time interface not investigated well.

## CONFIG.SYS

CONFIG.SYS device information and some other settings not parsed by DOSKRNL, but passed via init structure. Here list of DOSKRNL options:

- RMSIZE
- DEVICE
- SHELL
- DOS
- BREAK

todo add more info here

Also most of these setting can be adjusted via DOS Properties (aka DOS Settings). Refer OS/2 Version 2.0 Volume 2: DOS and Windows Environment for more information.

## API

According different sources IBM DOSKRNL implements API on level of MS-DOS 5.x. osFree DOSKRNL supports API as in FreeDOS kernel. More information about implemented functions available here. DOSKRNL also implements some extensions to API mostly aimed to communicate with host system.

## Supervisor calls

DOSKRNL uses SVC interface to call host functions.

From:
https://ftp.osfree.org/doku/ - **osFree wiki**

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