Comboot/chain.c32

From Syslinux Wiki

chain.c32 is a COM32 module for Syslinux. It can chainload MBRs, partition boot sectors, Windows bootloaders (ntldr, setupldr.bin and bootmgr), MS-DOS and PC-DOS io.sys, Freedos kernel.sys, isolinux.bin (only from ISOLINUX), grldr of grub4dos or a bootsector saved to a file. It can also swap BIOS drive numbers or hide partitions.

All options as available in chain.c32 of Syslinux 3.85 (with some updates introduced in later versions):

Usage:

```
chain.c32 hd<disk#> [<partition>] [options]
chain.c32 fd<disk#> [options]
chain.c32 mbr:<id> [<partition>] [options]
chain.c32 boot [<partition>] [options]
chain.c32 fs [options]
chain.c32 label=<label> [options]
chain.c32 guid=<label> [options]
```

```
                               chain.c32 options:

    file=<loader>                 load file, instead of boot sector

    isolinux=<loader>             load another version of ISOLINUX

    ntldr=<loader>                load Windows' NTLDR, SETUPLDR.BIN or BOOTMGR, or
                                  GRLDR

    cmldr=<loader>                load Recovery Console of Windows NT/2K/XP

    freedos=<loader>              load FreeDOS kernel.sys

    msdos=<loader>                load MS-DOS (2.xx to 6.xx) io.sys

    pcdos=<loader>                load PC-DOS ibmbio.com

    reactos=<loader>              load ReactOS freeldr

    grub=<loader>   [grubcfg=     load grub legacy stage2
    <config>]

    seg=<segment>                 jump to <seg>:0000 instead of 0000:7C00
```

```
   swap                          swap drive numbers, if bootdisk is not fd0/hd0


   hide                          hide primary partitions, except selected
                                 partition


   sethidden                     set the FAT/NTFS hidden sectors field
```

Contents

Numbering of Drives and Partitions

Drive numbering

Hard drive numbering starts at 0:

- `hd0` : first hard drive (as seen by the BIOS)
- `hd1` : second hard drive
- `hd2` : third hard drive
- ...

Floppy drive numbering starts at 0:

- `fd0` : first floppy drive
- `fd1` : second floppy drive

The drive from which Syslinux is booted can be referred to with the parameter:

- `boot`

The drive and partition from which Syslinux is booted can be referred to with the parameter:

- `fs`

Find partition by uuid or label in all GPT partitions on all available drives:

- **label**=*label*
- **guid**=*guid*

Note that **label** and **guid** works only on GPT partition tables, it is not *filesystem* but *partition* label and uuid.

Partition numbering

Partition numbers (short):

- 0 : MBR (default.)

  - 1-4 : primary partitions

    - 5 and higher : logical partitions

Partition numbers (long):

- `0` : **MBR** (default)

  - `1` : first **primary** partition
  - `2` : second primary partition
  - `3` : third primary partition
  - `4` : fourth primary partition

    - `5` : first **logical** partition
    - `6` : second logical partition
    - `7` : third logical partition
    - `8` : fourth logical partition
    - `9` : fifth logical partition
    - `10` : sixth logical partition
    - `11` : seventh logical partition
    - `12` : eighths logical partition
    - ...

Examples

```
UI menu.c32

LABEL boot_hd0
MENU LABEL Boot from first hard drive
COM32 chain.c32
APPEND hd0

LABEL boot_hd1
MENU LABEL Boot from second hard drive
```

```
COM32 chain.c32
APPEND hd1

LABEL boot_fd0
MENU LABEL Boot from first floppy drive
COM32 chain.c32
APPEND fd0

LABEL boot_syslinux_drive
MENU LABEL Boot the drive from which Syslinux is booted (hard drive or floppy drive)
COM32 chain.c32
APPEND boot

LABEL boot_syslinux_filesystem
MENU LABEL Boot the filesystem from which Syslinux is booted (partition in hard drive or floppy dri
COM32 chain.c32
APPEND fs

LABEL boot_hd2_2
MENU LABEL Boot second primary partition from thirth hard drive
COM32 chain.c32
APPEND hd2 2

LABEL boot_hd1_5
MENU LABEL Boot first logical partition from second hard drive
COM32 chain.c32
APPEND hd1 5

LABEL boot_hd3_0
MENU LABEL Boot MBR of fourth hard drive (same as "APPEND hd3")
COM32 chain.c32
APPEND hd3 0

LABEL boot_part_win7fs
MENU LABEL Boot ntld from GPT partition labelled "win7fs"
COM32 chain.c32
APPEND label=win7fs ntldr=/bootmgr
```

mbr:

The mbr: syntax means search all the hard disks until one with a specific MBR serial number (bytes 440-443) is found.

You can get the MBR serial number, by running the following command (change /dev/sda to the correct device):

```
$ hexdump -s 440 -n 4 -e '"0x%08x\n"' /dev/sda
0x0ec8694c
```

Or by running:

```
$ fdisk -l /dev/sda
...
Disk identifier: 0x0ec8694c
```

Example:

```
LABEL mbr_serial
COM32 chain.c32
APPEND mbr:0x0ec8694c
```

Options

file=<loader>

>   loads the file <loader> **from the SYSLINUX filesystem** instead of loading the boot sector.

seg=

>   loads at and jumps to <seg>:0000 instead of 0000:7C00.

isolinux=<loader>

>   Chainload another version/build of the ISOLINUX bootloader and patch the loader with appropriate parameters in memory. This avoids the need for the -eltorito-alt-boot parameter of mkisofs, when you want more than one ISOLINUX per CD/DVD.

ntldr=<loader>

>   equivalent to seg=0x2000 file=<loader> sethidden, used with WinNT's loaders

>   >   Example loaders: NTLDR (XP, 2003), BOOTMGR (Vista, 2008, 7), GRLDR (Grub4DOS).
>   >   See: HowTos & Linux and Windows deployment

cmldr=<loader>

>   used with Recovery Console of Windows NT/2K/XP. same as ntldr=<loader> & "cmdcons\0" written to the system name field in the bootsector.

freedos=<loader>

>   equivalent to seg=0x60 file=<loader> sethidden, used with FreeDOS kernel.sys.

msdos=<loader>

>   equivalent to seg=0x70 file=<loader> sethidden, used with MS-DOS (v.2.xx to 6.xx)' io.sys.

pcdos=<loader>

>   equivalent to seg=0x70 file=<loader> sethidden, used with PC-DOS' ibmbio.com.

reactos=<loader>

>   equivalent to seg=0:0x8000:0x8100 file=<loader> setbpb nohand, used with ReactOS' freeldr. Add 'save'

option so to store corrected BPB values. Supported since Syslinux v.4.05.

grub=<loader> [grubcfg=<config>]

equivalent to seg=0x800::0x200 file=<loader> nohand nosect grub, used with grub legacy's stage2, performing additional corrections on the file in memory. Optionally, an alternate config file can be specified through the 'grubcfg=' option. Supported since Syslinux v.4.02.

swap

if the disk is not fd0/hd0, install a BIOS stub which swaps the drive numbers.

hide

change type of primary partitions with IDs 01, 04, 06, 07, 0b, 0c, or 0e to 1x, except for the selected partition, which is converted the other way.

sethidden

update the "hidden sectors" (partition offset) field in a FAT/NTFS boot sector.

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