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>`: load grub legacy stage2
  - `grubcfg= <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

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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 : eigths 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
```
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:
Options

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

seg=<segment>
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 ntdr=<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 noload, used with ReactOS' freldr. 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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