

Mount & Boot Center

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1. About the Mount & Boot Center

Mount & Boot Center is a powerful and easy-to-use tool to:

- reassign and fix missing drive letters (mount points), including disk C:, in Windows installations
- easily edit boot menus (BCD registry hive of BOOTMGR and boot.ini file of NTLDR)
- fix boot records and active partition flags
- change disk signatures and GUIDs (in sync with MountedDevices key in SYSTEM hive and device descriptors in BCD registry hive)
- resolve conflicts of disk signatures

Mount & Boot Center supports both BIOS and UEFI systems and the following Windows versions: Windows 2000, XP, Vista, 7, 8, 8.1 and 10. Equivalent versions of Windows Server (NT 5.x, 6.x, 10.x) are supported as well.

2. How to start

After booting, Emergency Boot Kit displays its main menu.

To start the Mount & Boot Center, press the **F5** key or click mouse on *Mount & boot center* line.

Searching for operating systems and bootloaders splash screen will appear for a while, then it will be replaced by the main screen of the Mount & Boot Center (see below).

Emergency Boot Kit version 1.6a (64-bit)

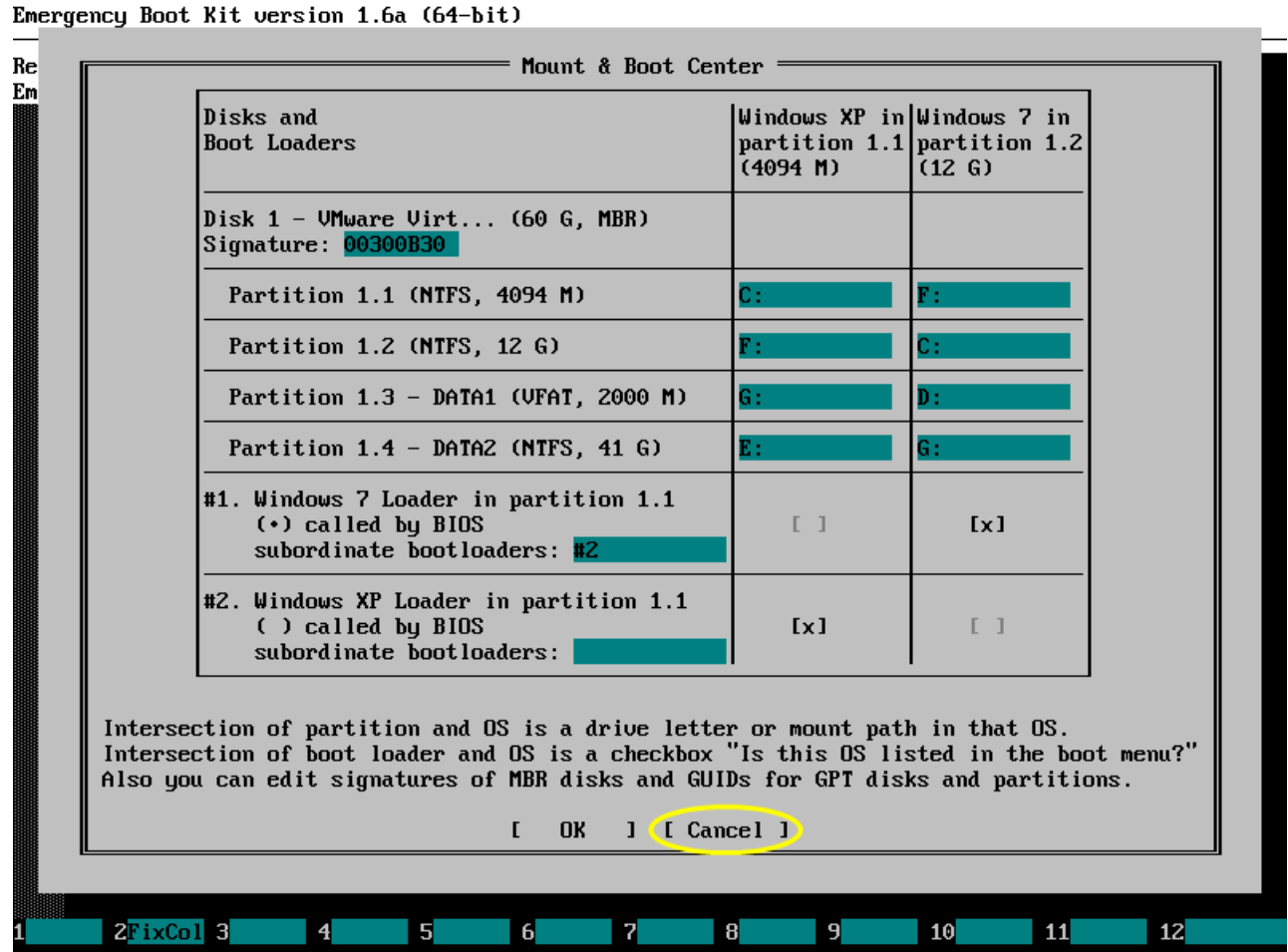
Registered to: User Name
Email: username@example.com



3. How to

3.1. Exit the Mount & Boot Center

To exit the Mount & Boot Center, press **Esc** or click *Cancel* button.



3.2. Change drive letter (mount point) for partition in Windows installation

You can change drive letters as you like. You can even move or reassign disk C: (unlike Disk Manager snap-in of Computer Management applet of the Windows Control Panel): this feature allows for fixing certain kind of boot problems, like Windows hanging on *Preparing your desktop* message at boot time.

Blank entry means drive letter is not assigned, but filesystem still may be mounted by Windows and be accessible via special path like `\\?\volume{GUID}` (run `mountvol.exe` in the Windows console to see full list of such paths).

When you click *OK* or press **Enter**, Mount & Boot Center will change `MountedDevices` key of the SYSTEM hive of each Windows installation found on current PC.

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Re Em

Mount & Boot Center

Disks and Boot Loaders	Windows XP in partition 1.1 (4094 M)	Windows 7 in partition 1.2 (12 G)
Disk 1 - VMware Virt... (60 G, MBR) Signature: 00300B30		
Partition 1.1 (NTFS, 4094 M)	C:	F:
Partition 1.2 (NTFS, 12 G)	F:	C:
Partition 1.3 - DATA1 (UFAT, 2000 M)	G:	D:
Partition 1.4 - DATA2 (NTFS, 41 G)	E:	G:
#1. Windows 7 Loader in partition 1.1 (•) called by BIOS subordinate bootloaders: #2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
#2. Windows XP Loader in partition 1.1 () called by BIOS subordinate bootloaders:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Intersection of partition and OS is a drive letter or mount path in that OS.
 Intersection of boot loader and OS is a checkbox "Is this OS listed in the boot menu?"
 Also you can edit signatures of MBR disks and GUIDs for GPT disks and partitions.

[OK] [Cancel]

1 2 FixCol 3 4 5 6 7 8 9 10 11 12

3.3. Add/Remove Windows installation in the boot menu

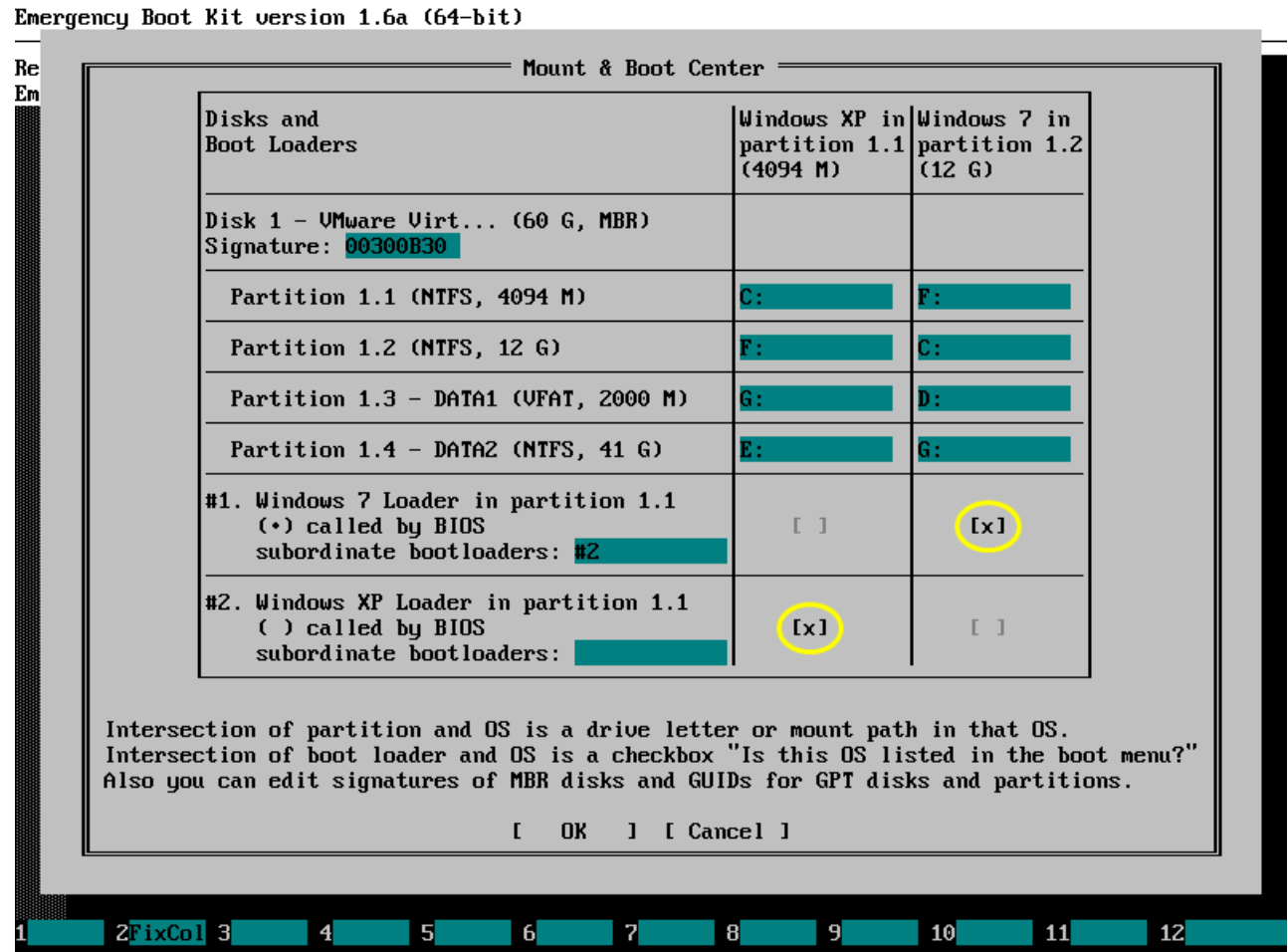
Adding particular Windows installation to the boot menu of given boot loader is easy: just check the appropriate checkbox. Rows are for bootloaders, columns are for Windows installations. To remove Windows installation from the boot menu, uncheck the appropriate checkbox.

Please note that NTLDR bootloaders can boot Windows NT 5.x only (Windows 2000, Windows XP and server equivalents), and BOOTMGR bootloaders can boot Windows NT 6.x/10.x only (Windows Vista, 7, 8, 8.1, 10 and server equivalents) — that's why some checkboxes are grayed out.

When you click *OK* or press **Enter**, Mount & Boot Center will modify boot.ini files and BCD registry hives.

The following boot errors can be fixed this way:

- *0xc000000e (The boot selection failed because a required device is inaccessible)*
- *0xc000000f (An error occurred while attempting to read the boot configuration data)*
- *0xc0000098 (The Windows Boot Configuration Data file does not contain a valid OS entry)*



3.4. Verify boot path and fix various boot errors

There are *called by BIOS* radio buttons which can be switched by mouse click.

If radio button is active, then Mount & Boot Center has verified entire boot path:

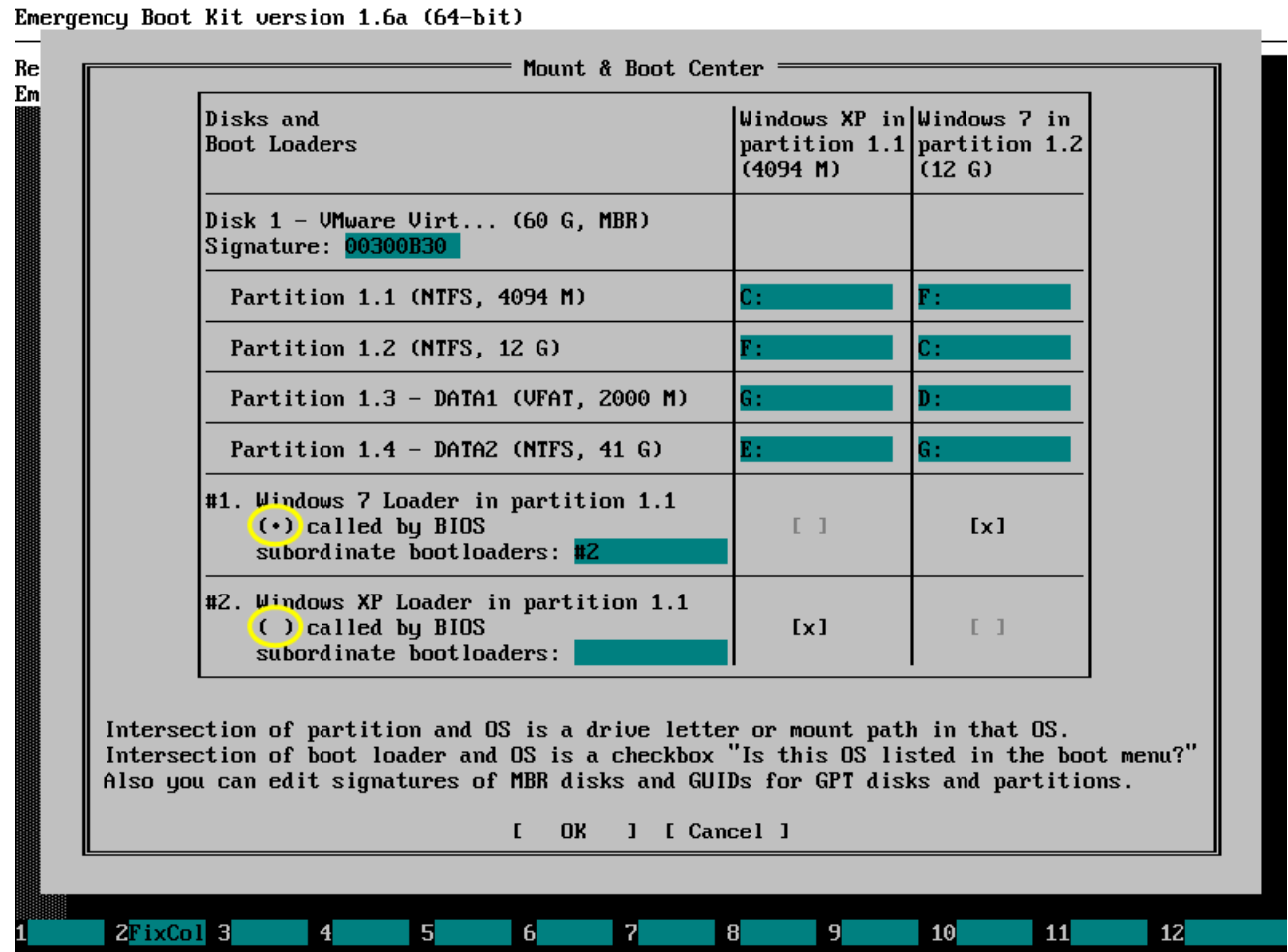
- boot code in MBR is correct
- active partition flag is set for partition which contains the bootloader
- partition has appropriate boot code for particular version of the bootloader

The following boot errors can be fixed this way:

- *Operating System not found*
- *Missing operating system*
- *Error loading operating system*
- *NTLDR is missing*
- *BOOTMGR is missing*

For Windows Loaders on modern UEFI-based computers, Mount & Boot Center displays equivalent *called by UEFI* radio buttons, verifies and updates UEFI variables *Boot####* and *BootOrder* accordingly.

If neither *called by BIOS* nor *called by UEFI* option is not displayed for Windows Loader, then please reboot EmBootKit in the UEFI mode. Otherwise (in CSM/Legacy mode) EmBootKit cannot read or update UEFI variables.



3.5. Chainload Windows bootloaders

Although modern Windows NT 6.x/10.x bootloader (BOOTMGR) can't load Windows XP and earlier systems directly, it can chainload older Windows NT 5.x/4.x bootloader (NTLDR) which can load Windows XP and earlier systems.

BOOTMGR can chainload NTLDR within the same partition it resides in, or transfer control to another partition if necessary.

Mount & Boot Center has *subordinate bootloaders* editable field to support this feature.

When you click *OK* or press **Enter**, Mount & Boot Center will appropriately modify BCD registry hive of the higher BOOTMGR.

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Re Em

Mount & Boot Center

Disks and Boot Loaders	Windows XP in partition 1.1 (4094 M)	Windows 7 in partition 1.2 (12 G)
Disk 1 - VMware Virt... (60 G, MBR) Signature: 00300B30		
Partition 1.1 (NTFS, 4094 M)	C: []	F: []
Partition 1.2 (NTFS, 12 G)	F: []	C: []
Partition 1.3 - DATA1 (VFAT, 2000 M)	G: []	D: []
Partition 1.4 - DATA2 (NTFS, 41 G)	E: []	G: []
#1. Windows 7 Loader in partition 1.1 (*) called by BIOS subordinate bootloaders: #2 []	[]	[x]
#2. Windows XP Loader in partition 1.1 () called by BIOS subordinate bootloaders: []	[x]	[]

Intersection of partition and OS is a drive letter or mount path in that OS.
 Intersection of boot loader and OS is a checkbox "Is this OS listed in the boot menu?"
 Also you can edit signatures of MBR disks and GUIDs for GPT disks and partitions.

[OK] [Cancel]

1 2 FixCol 3 4 5 6 7 8 9 10 11 12

3.6. Change signature of MBR disk

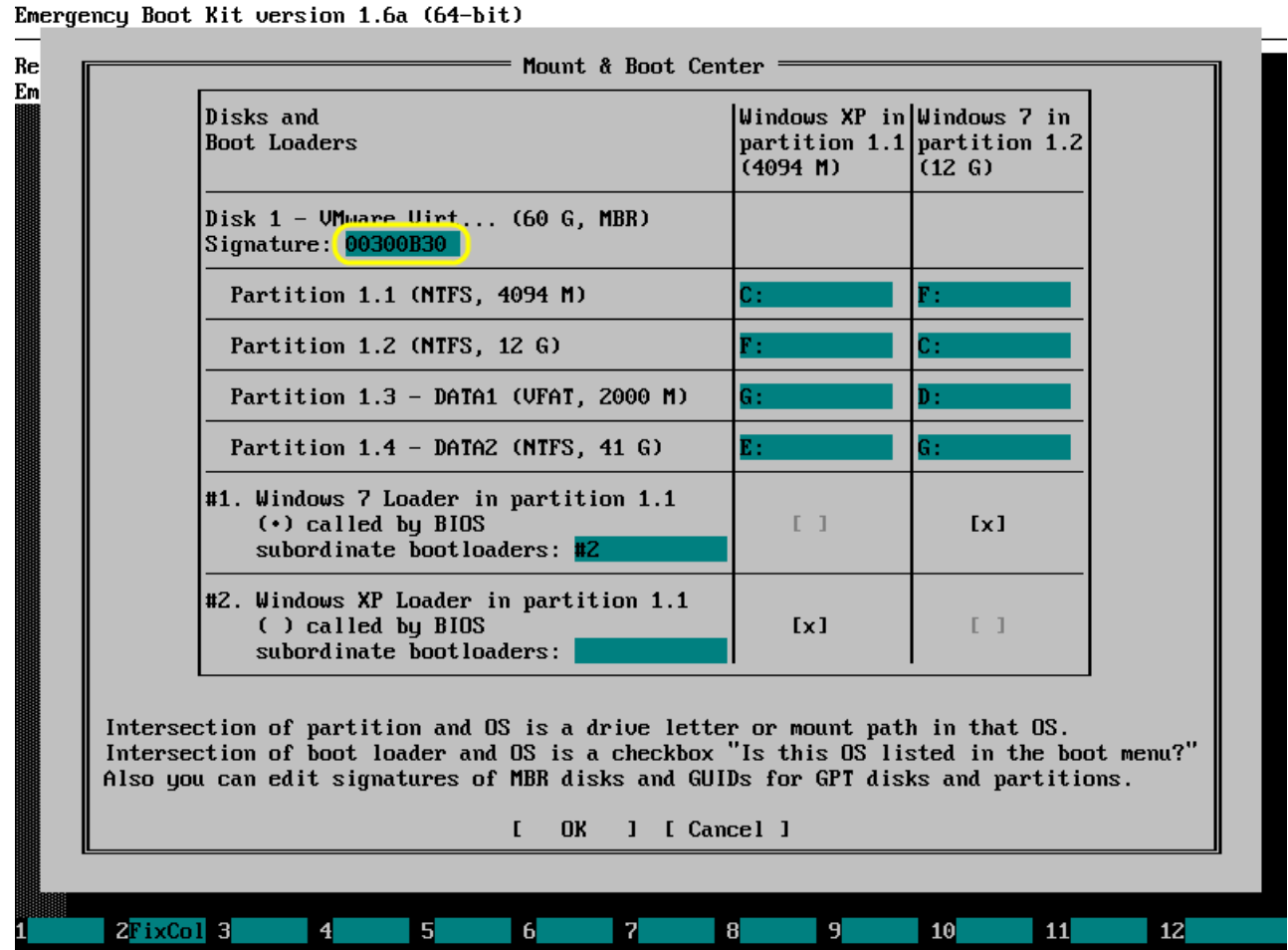
Windows distinguishes physical disks by their signature — 32-bit unsigned integer value stored in the MBR. In Windows, signature is assigned as a random number when MBR is written to the disk for the first time and never changed afterwards.

Disk signature is later used by Windows as an anchor to identify the physical disk. It's stored in *MountedDevices* key of SYSTEM registry hives and in device descriptors of BCD registry hive used by BOOTMGR at boot time.

Mount & Boot Center will change signature of MBR-formatted physical disk simultaneously:

- in the MBR
- in *MountedDevices* key of the SYSTEM hive for every Windows installation
- in the BCD registry hive for every BOOTMGR bootloader

It's very important to change signature simultaneously, otherwise links between MBR physical disks, operating systems and bootloaders will be broken and Windows will not boot.



3.7. Resolve signature conflict between two MBR disks

As explained above, Windows uses disk signature as an anchor to identify the physical disk, so existence of two physical disks with the same signature is a disaster for Windows: it can neither boot from such disk nor mount its partitions.

Practical example when such situation occurs is a deconstruction of Intel Software RAID-1. Settings of Intel Software RAID are stored in CMOS memory by BIOS setup. When CMOS battery drains, CMOS checksum becomes invalid and BIOS setup settings are cleared to default values during reboot. Hence RAID-1 is automatically deconstructed and we have two physical disks with identical signature and formerly-identical contents.

EmBootKit Mount & Boot Center can detect such situation and offer a fix (like on the screenshot). Also experienced user can fix this manually by editing disk signature and mount points.

There are different disks with same signature or GUID. Please fix manually or press F2. ←

Mount & Boot Center

Disks and Boot Loaders	Windows XP in partition 1.1 (4094 M)	Windows 7 in partition 1.2 (12 G)	Windows XP in partition 2.1 (4094 M)
Disk 1 - VMware Virt... (60 G, MBR) Signature: 00300B30			
Partition 1.1 (NTFS, 4094 M)			
Partition 1.2 (NTFS, 12 G)			
Partition 1.3 - DATA1 (VFAT, 2000 M)			
Partition 1.4 - DATA2 (NTFS, 41 G)			
Disk 2 - VMware Virt... (60 G, MBR) Signature: 00300B30			
Partition 2.1 (NTFS, 4094 M)	C:	F:	C:
Partition 2.2 (NTFS, 12 G)	F:	C:	F:

Intersection of partition and OS is a drive letter or mount path in that OS.
 Intersection of boot loader and OS is a checkbox "Is this OS listed in the boot menu?"
 Also you can edit signatures of MBR disks and GUIDs for GPT disks and partitions.

[OK] [Cancel]

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3.8. Change GUIDs of GPT disk or partition

This screenshot shows Mount & Boot Center running in UEFI system with Windows 8.1 and Windows 10.

For GPT disks, Windows uses combination of disk GUID and partition GUID as an anchor to identify the partition. It's stored in *MountedDevices* key of SYSTEM registry hives and in device descriptors of BCD registry hive used by BOOTMGR at boot time. Partition GUID is also stored in the *Boot####* UEFI variables.

Mount & Boot Center will change GUIDs of GPT-formatted disk/partition simultaneously:

- in the GPT partition table
- in *MountedDevices* key of the SYSTEM hive for every Windows installation
- in the BCD registry hive for every BOOTMGR bootloader
- in the *Boot####* UEFI variables

It's very important to change GUIDs simultaneously, otherwise links between GPT partitions, operating systems, bootloaders and UEFI firmware will be broken and Windows will not boot.

If *called by UEFI* option is not displayed for Windows Loader on GPT disk, then please reboot EmBootKit in the UEFI mode. Otherwise (in CSM/Legacy mode) EmBootKit cannot read or update UEFI variables.

