

Re: 2 wondows versions detected on pc startup?

Source:

http://www.tech-archive.net/Archive/WinXP/microsoft.public.windowsxp.setup_deployment/2007-04/msg00022.htm

- *From:* "Wesley Vogel" <123WVogel955@xxxxxxxxxxxxx>
 - *Date:* Tue, 3 Apr 2007 13:21:40 -0600
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Well, let me say this on that: You know more about what's in the registry than *I* do. :-)

My F3 key gets used a lot. I also use RegScanner from NirSoft.

"RegScanner is a small utility that allows you to scan the Registry, find the desired Registry values that match to the specified search criteria, and display them in one list. After finding the Registry values, you can easily jump to the right value in RegEdit, simply by double-clicking the desired Registry item."

RegScanner Tool: Alternative to RegEdit find of Windows
<http://nirsoft.net/utlils/regscanner.html>

There also seems to be more that ntldr gets from the BIOS because ntldr has to interpret the meaning of "rdisk(0)" and "rdisk(1)", etc., when it goes looking for the OSes

The MBR.

I may have some of this wrong. But, the way I understand it on an x86-based computer, after the POST, the BIOS locates and reads the configuration information stored in CMOS looking for the order of what drive to look at for an operating system. If the first bootable disk is a fixed disk the BIOS examines the very first sector of the disk for a Master Boot Record (MBR). (A Master Boot Record is made up of two parts – the partition table which describes the layout of the fixed disk and the partition loader code which includes instructions for continuing the boot process.) With a valid MBR loaded into memory the BIOS transfers control of the boot process to the partition loader code. The BIOS is done.

The partition loader (or Boot Loader) examines the partition table for a partition marked as active (or bootable). The Boot Loader then searches the very first sector of that partition for a Boot Record. The active partition's boot record is checked for a valid boot signature and if found

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the boot sector code is executed as a program.

This is where Windows and NTLDR comes in, the partition loader code loads NTLDR. NTLDR is the Boot Loader for Windows NT. NTLDR wants to see a boot.ini. Supposedly, if a boot.ini is not present it will default to C:\Windows. I am not about to delete my boot.ini to test this. ;-)

Ntldr reads the Boot.ini file to determine the location of the operating system boot partition. For systems that use a single-boot configuration, Ntldr initiates the hardware detection phase by starting Ntdetect.com. For multiple-boot configurations you get the Boot Menu, to pick an operating system from.

Windows uses the Advanced RISC Computing Specification (ARC) Path Naming Convention.

The Advanced RISC Computing Specification

<http://www.netbsd.org/Documentation/Hardware/Machines/ARC/riscspec.pdf>

Disk (rigid). Where r stands for rigid. So, rdisk is the physical hard disk. fdisk is a FloppyDisk. Where f is for floppy.

I "think" that the path(s) in the boot.ini tells NTLDR where to look for any operating systems.

From my boot.ini...

```
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
```

The Path is: Adapter\Controller\Peripheral\Partition\Filepath

multi(0) is a MultiFunction Adapter.

disk(0) is the Controller for the disk, a hard disk in this case (rdisk denotes a hard disk).

rdisk(0) is the Peripheral, which is a hard disk.

partition(1) is the Partition on the hard disk.

WINDOWS is the Filepath.

rdisk(0) is Primary Controller channel 0 (Master)

rdisk(1) is Secondary Controller channel 0 (Master)

rdisk(2) is Primary Controller channel 1 (Slave)

rdisk(3) is Secondary Controller channel 1 (Slave)

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Hope this helps. Let us know.

Wes

MS-MVP Windows Shell/User

In [news:46116e30\\$0\\$1396\\$4c368faf@xxxxxxxxxxxxxxxxx](mailto:news:46116e30$0$1396$4c368faf@xxxxxxxxxxxxxxxxx),

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Timothy Daniels <TDaniels@xxxxxxxxxxxxxx> hunted and pecked:

Well, let me say this on that: You know more about what's in the registry than *I* do. :-)

The core of my question, though, lies in whether msconfig only verifies that the ARC path entries in boot.ini each lead to an installed Windows OS, or whether it can actually find OSes and then create corresponding entries in boot.ini for them. I guess the latter is yet to be seen, although if I had the energy and time, I could run some experiments which would answer the question. I'll let you know if I come up with anything.

There also seems to be more that ntldr gets from the BIOS because ntldr has to interpret the meaning of "rdisk(0)" and "rdisk(1)", etc., when it goes looking for the OSes. There must be a vector (i.e. an ordered list) of HD locations that the BIOS exposes to ntldr so that the ARC path entries in boot.ini can be understood by ntldr so that ntldr can find the HDs that contain an OS. But Phoenix Technologies has refused to say anything about how the BIOS does this it except to say "ask Microsoft". I have not been able to understand the reason for this stonewall, but it exists.

TimDaniels

"Wesley Vogel" wrote:

You got pretty much what I know about it, Tim. Check All Boot Paths reads the boot.ini. How? I have no idea. I also have no idea how checking or unchecking Boot Options adds or removes switches in the boot.ini. I do know that it is safer to let msconfig edit the boot.ini, especially for first timers, than directly editing it in Notepad.

As far as I know, there are only a couple of things that Windows even knows about a machine's BIOS.

HKEY_LOCAL_MACHINE\HARDWARE\DESCRIPTION\System
Value Name: SystemBiosVersion
Data Type: REG_MULTI_SZ
Value Data: This should show the BIOS version.

Value Name: SystemBiosDate
Data Type: REG_MULTI_SZ
Value Data: This should show the BIOS date.

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Biosinfo
Value Name: InfName
Data Type: REG_SZ
Value Data: biosinfo.inf

Value Name: SystemBiosDate

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Data Type: REG_SZ

Value Data: This should show the BIOS date.

Biosinfo.inf: Windows file that lists machines on the Autoenable APM list and the Disable APM list, and also lists the BIOS detection sequences used to match them.

Biosinfo vs. Machine-Specific Info. The results of machine-specific detection versus Biosinfo.inf are stored in
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\BIOSInfo\APM.
If the

"Attributes" value is 1, the machine's APM BIOS is "known good" and the machine is on the Autoenable APM list. If the value 2, the machine's APM BIOS is "known bad" and the machine is on the Disable APM list. Otherwise, the machine is neutral.

C:\WINDOWS\inf\biosinfo.inf

If this is any help to you. My boot.ini.

```
[boot loader]
timeout=5
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP
Professional" /noexecute=optin /fastdetect /sos
```

multi(0)disk(0)rdisk(0)partition(1) appears in my registry.

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control
Value Name: SystemBootDevice
Data Type: REG_SZ
Value Data: multi(0)disk(0)rdisk(0)partition(1)

/noexecute=optin /fastdetect /sos also appear in that key.

Value Name: SystemStartOptions
Data Type: REG_SZ
Value Data: NOEXECUTE=OPTIN FASTDETECT SOS

FYI, NOEXECUTE=OPTIN Enables DEP for core system images and those specified in the DEP configuration dialog. Added by SP2.

FASTDETECT Default boot option for Windows. Causes NTDETECT to skip parallel and serial device enumeration, so that NTDETECT can support booting Windows NT 4. Note that ntetect.com detects installed hardware components when XP boots.

SOS I added this. Causes Windows to list the device drivers marked to load at boot time and then to display the system version number (including the build number), amount of physical memory, and number of

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processors. Maybe I should have just said, "You got pretty much what I know about it", and left it at that, :-)

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Hope this helps. Let us know.

Wes

MS-MVP Windows Shell/User