

The Blue Screen Stop 0x0000007B Error in XP Embedded Includes Stop 0A – AHCI Driver Issue

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One of the most common problems that first-time developers run into is the Blue Screen Stop 0x0000007B error. Although the book *Windows XP Embedded Advanced* has the solution listed in the Tips-and-Tricks chapter, the explanation is not as detailed as it could be, and developers still run into the problem.

The error is occurring because a driver is missing from the image such as a PCI bus driver, disk driver, or IDE controller driver. Many developers start the XPe development process using the DOS version of Target Analyzer – TA.EXE instead of TAP.EXE. There are many reasons why developers go the TA.EXE route: loading Windows XP Pro on the target is time consuming, it is physically not possible to install Windows XP Pro on the target, or running WinPE is not possible. TA.EXE is like a PCI sniffer program. It will check the CPU bus, basic hardware ICs, and the BIOS to gather information for the PMQ file. TAP.EXE goes a little further by checking Windows XP's or 2000's registry to see what drivers have been loaded by the OS. The issue is with TA.EXE. TA.EXE doesn't gather all the components needed to boot the operating system.

My understanding is that the error occurs when the OS is switching from real mode to protected mode. The OS is loading the drivers necessary to access the boot drive in protected mode. Today's PCs access the drive controller via PCI bridge chips. If the correct PCI driver or other disk device drivers are not in the image, the system will blue screen.

Some of the missing components TA.EXE doesn't find might be the following:

- PCI standard host CPU bridge
- PCI standard ISA bridge
- Plug and Play Software Device Enumerator
- Primary IDE Channel
- Secondary IDE Channel
- Disk Drive
- Standard Dual Channel PCI IDE Controller
- Standard IDE/ESDI Hard Disk Controller
- Microsoft ACPI-Compliant System (if the system is an ACPI compliant system, i.e. contains the ACPI Multiprocessor PC, ACPI Uniprocessor PC, or Advanced Configuration and Power Interface (ACPI) PC components)

A specific OEM BUS master IDE or SATA controller component might also be the culprit. You will have to review you board manufactures documentation and driver CD for more information.

The best way to gather all the necessary components is to install Windows XP Pro on the target systems and run TAP.EXE. The next best solution is to use XPe's CD1 and boot to WinPE and run TAP.EXE. You should note that there are limitations with WinPE, since not all the drivers are in the WinPE image, thus TAP under WinPE would not capture all the components that TAP under Windows XP Pro would capture. For example USB or 1394 client drivers are not in WinPE, but you would get the components needed to boot the OS. If you only have MS-DOS, then try adding the components listed above to see if that solves the problem.

SATA drives – There have been reports that mixing different version of SATA drives with different RAID controller cards can also lead to a stop 0x7B condition. Make sure the controller versions on the SATA drive and the controller card are compatible.

If all else fails and to prove that XPe runs on the system, build an image using either MinLogon Sample Macro or WinLogon Sample Macro components and don't include the TA.EXE results. These two macro component have the basic components to build an image that will run on any system.

There is a different stop condition if you are using the Advanced Host Controller Interface (AHCI) for SATA drive. If the AHCI option is enabled in the BIOS, the AHCI driver must be in the image for the OS to boot from the SATA hard drive. Boot XP Embedded from a USB flash disk is one of the image transfer option I like to use. The idea is to boot to the USB flash disk and access an internal drive to download an XP Embedded image. A Stop 0A problem occurred when I had the AHCI driver loaded in the USB boot image. The blue screen would always occur during FBA. The solution is to load the AHCI driver after FBA completes. The USB flash disk image would complete FBA successfully, I would then load the AHCI driver manually via Device Manger, and once the driver was load I could get access to the internal hard drive.

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