

WHAT SHOULD YOU DO IF YOUR COMPUTER WILL NOT BOOT UP?: PART 1--THE BASICS

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Virtual Technology
Conference
Saturday, 11/05/16
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SUMMARY

If your computer will not boot up, here are some logical troubleshooting steps for you to follow from the simple and obvious to more complex procedures.

TOPICS

- Basic troubleshooting of any computer
- Troubleshooting a "Windows.." desktop computer
- Troubleshooting a "Windows.." laptop computer
- Troubleshooting a Mac "OS X" computer
- Do not use "msconfig" for permanent changes to a "Windows.." computer

BASIC TROUBLESHOOTING OF ANY COMPUTER

- If the computer has a power adapter (like most laptops have), check if the indicator LED on it is lit up (if it has one)
- Push in all connectors:
power cables, USB devices, etc.

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- Check for power at the electrical outlet by plugging a lamp or other electrical device

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- Unplug the power cord or the power adapter and examine it for any breaks or damage
- If you see problems, try replacing the power cord or power adapter
- If you do not see any problems, re-attach the power cord or power adapter

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- If the computer makes some rhythmic beeps when you first turn it on, you can decipher their meaning by using a Web browser in a "known good" computer to go to <http://www.pchell.com/hardware/beepcodes.shtml> or the users manual for your computer or the owners manual for the motherboard of your computer

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- After touching a cold water pipe or an electrical ground, disconnect all external USB or external eSATA hard drives, external DVD/CD drives, and flash drive devices and then see if the computer will start up.

If this makes the computer start up, reconnect these devices one or more at a time to isolate the culprit.

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- After touching a cold water pipe or an electrical ground, disconnect the power cord or power adapter so that the computer is not attached to any source of live power. Then open up the computer and attempt to push in all of the connectors inside the computer. Then reattach the power cord or power cable and see if the computer will start up.

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

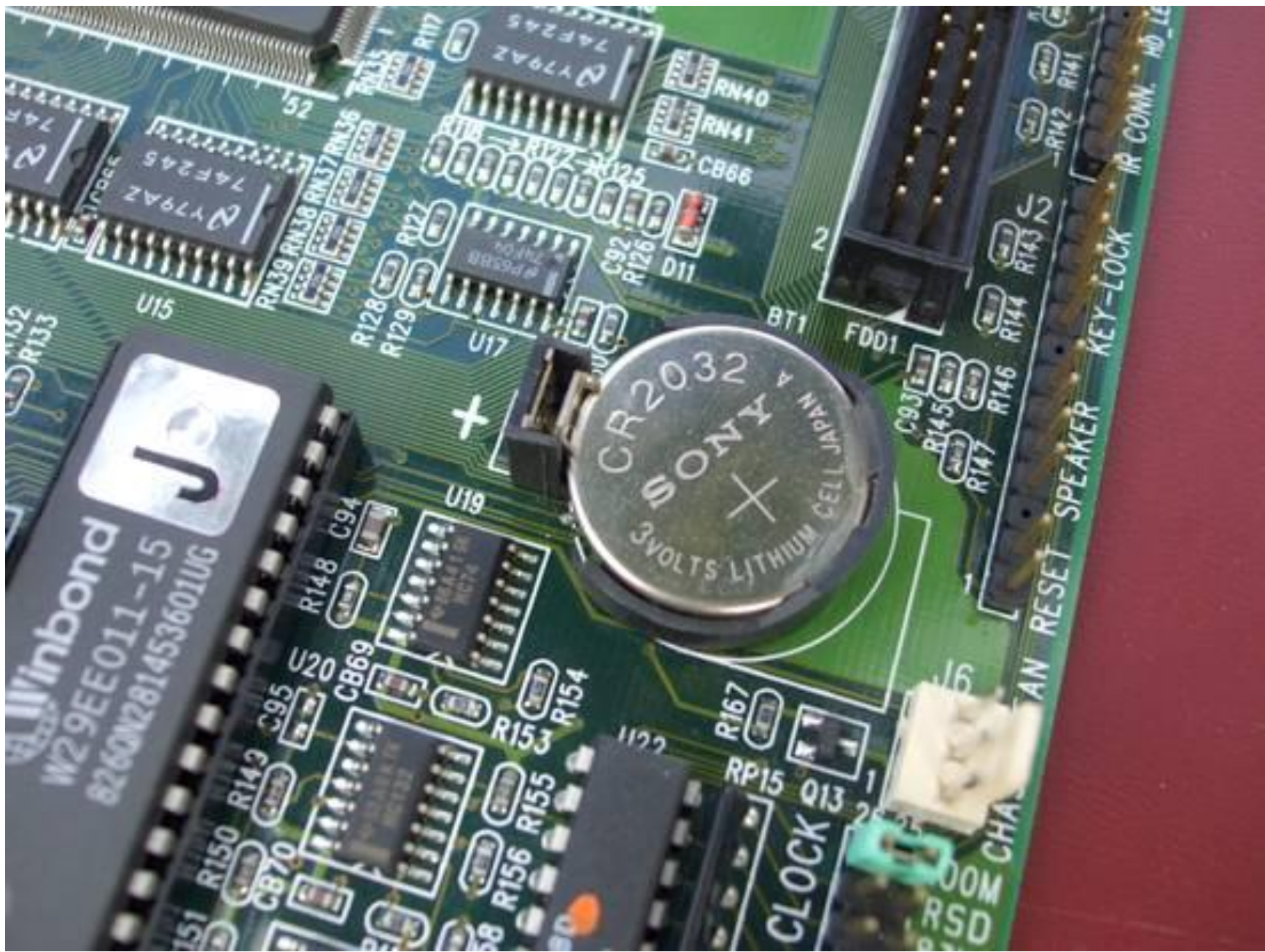
- A bad or poorly-seated RAM module can cause the initial "Power-On Self Test" to terminate:
disconnect the power cord or power adapter, wait 5 minutes, after touching a cold water pipe or electrical group, try pulling out each of the RAM modules so see if the computer will boot up with one of them removed

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- A poorly-seated graphics adapter can cause the initial "Power-On Self Test" to terminate: disconnect the power cord or power adapter, after touching a cold water pipe or electrical group, try pulling out the graphics adapter, use gentle air movement such as blowing into a straw to get the dirt out of the PCI, PCIe, or AGP slot, and then re-insert the graphics adapter.

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- Disconnect the power cord or power adapter, touch a cold water pipe or an electrical ground, remove the "CMOS battery", waiting five minutes, and then re-insert the "CMOS battery". Then re-attach the power-cord or power adapter and see if the computer starts working again.



BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- If the computer still will not start up, replace the "CMOS battery.

See

<http://www.computerhope.com/issues/ch000239.htm>

or

<http://pc-restorer.com/replacing-cmos-batteries-in-old-pcs/>

CMOS Battery



<http://www.computerhope.com>

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- The battery will pop out if you use a small tool to push the metal retainer tab away from the center of the battery:

CMOS Battery



<http://www.computerhope.com>



BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- The ancient blue "Varta" battery in this photo definitely needs to be replaced by means of some creative soldering work:



BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- This photo shows some batteries that were used in computers about 20 years ago:
The battery holder holds 3 regular or rechargeable AA cells and was very popular with folks who built their own computers.



BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- After touching a cold water pipe or an electrical ground, remove any non-essential ISA, PCI or PCIe add-on cards (especially newly-installed ones) and see if the computer will start up. If this makes the computer start up, re-install these devices one or at a time to isolate the culprit.

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- If a "Windows 7" or earlier computer gets through the initial "Power-On Self Test" but falters afterwards,
press F8
or
press Shift+F8
right after powering up the computer and select one of the "Safe Modes" to boot up without some of the "drivers" (for hardware components) and most of the "Startup Programs"

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- To get into "Safe Mode" in "Windows 8" or "Windows 8.1", power up the computer then

press F8

or

press Shift+F8

If you cannot get into "Safe Mode", see

<http://www.digitalcitizen.life/5-ways-boot-safe-mode-windows-8-windows-81>

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- To get into "Safe Mode" in "Windows 10"
see
<https://support.microsoft.com/en-us/help/12376/windows-10-start-your-pc-in-safe-mode>

BASIC TROUBLESHOOTING OF ANY COMPUTER (continued)

- If a "Windows.." computer boots up okay in "Safe Mode", start turning off drivers and "Startup Programs" to isolate the culprit.

TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER

- 95+ percent of "Windows.." Desktop computers are "ATX version 1" or "ATX version 2" in "form factor"

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

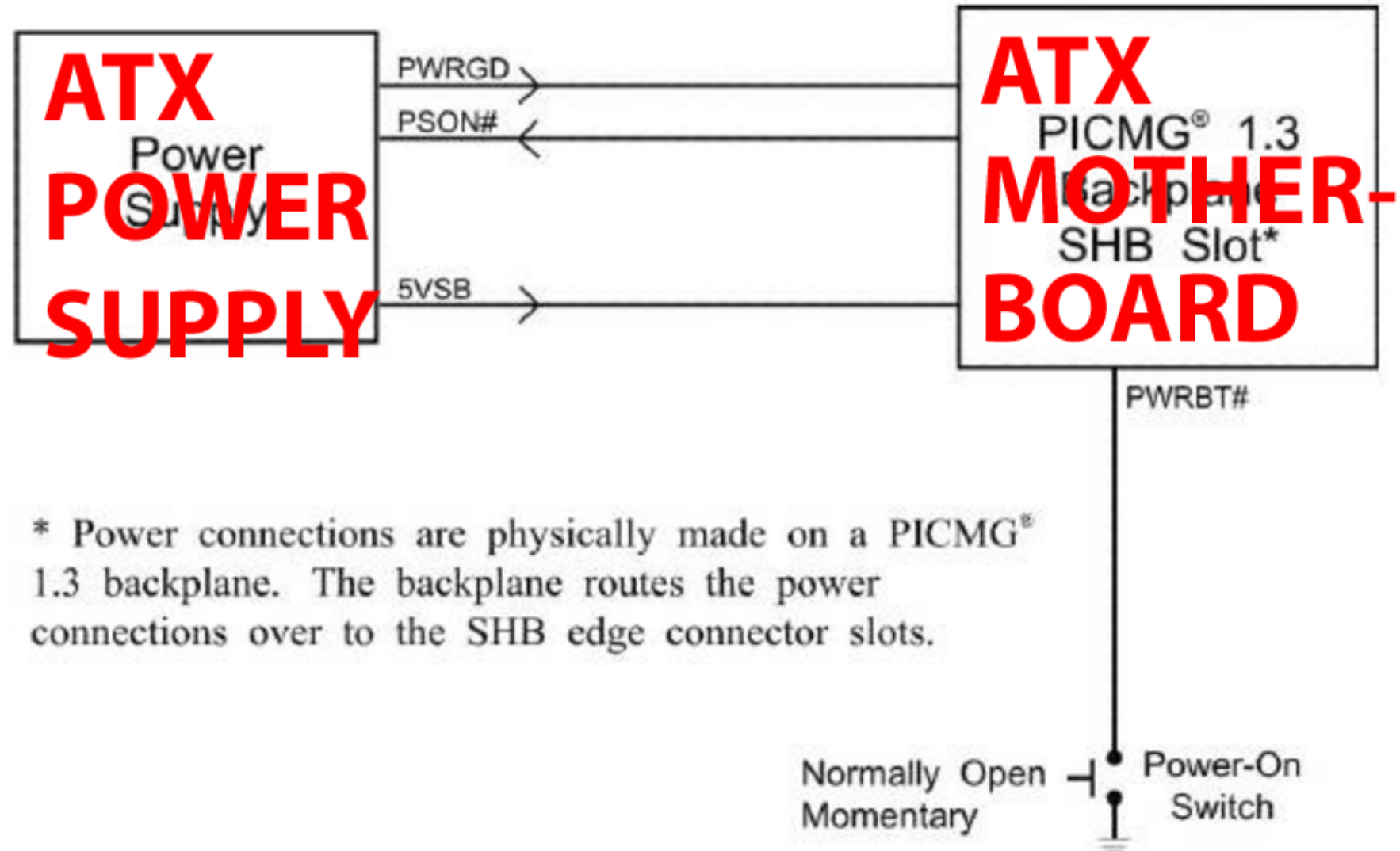
- ATX power supply and ATX motherboard are highly interconnected with +5 "standby" volts running through the motherboard whenever the power switch on the **back** of the power supply (if there is one) is toggled to the "On" position even if the computer appears to be turned off

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- According to [http://www.manualslib.com/manual/967581/Trenton-Jxt6966.html?page=37:](http://www.manualslib.com/manual/967581/Trenton-Jxt6966.html?page=37)

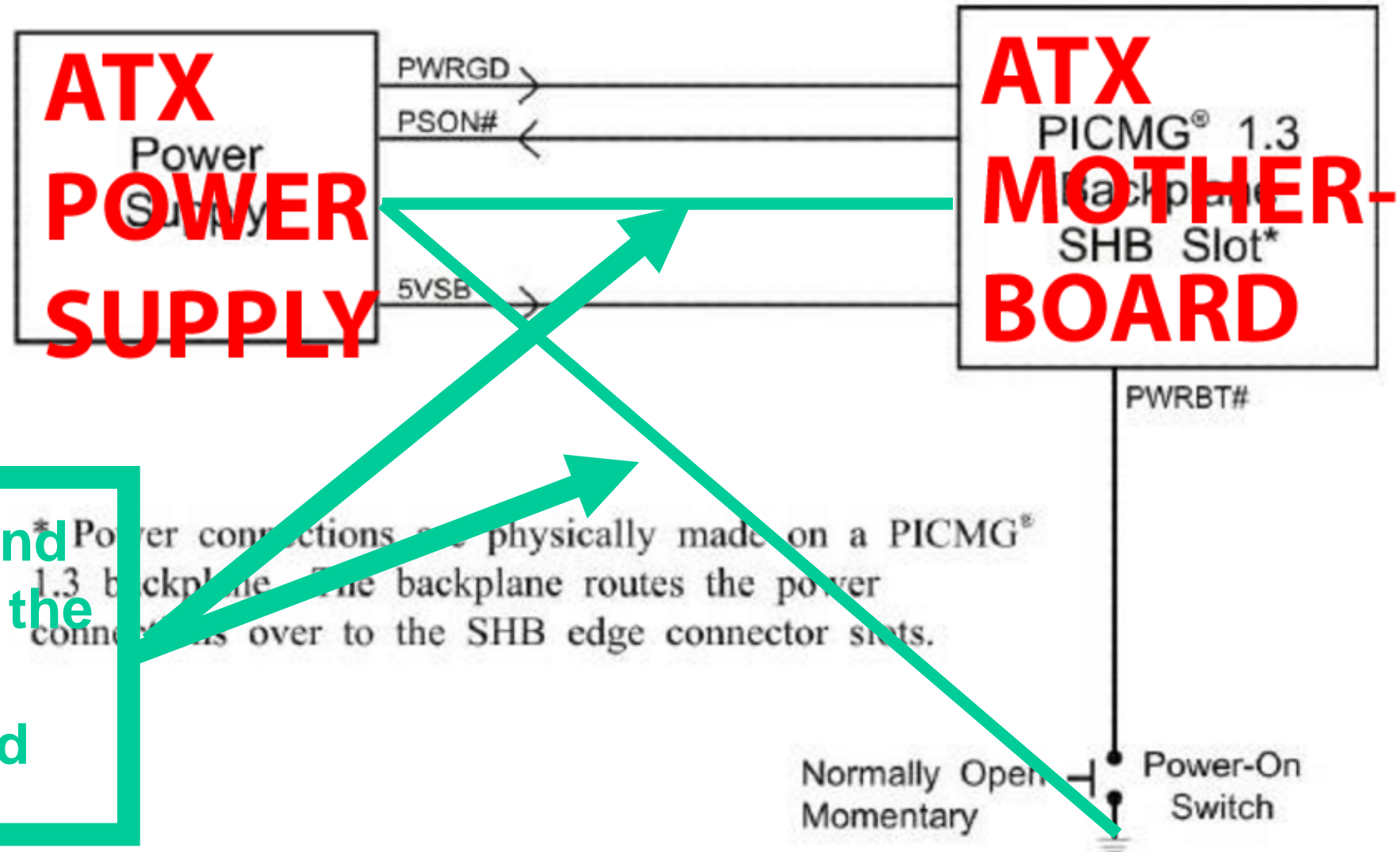
Power Supply and SHB Interaction

The following diagram illustrates the interaction between the power supply and the processor. The signals shown are PWRGD (Power Good), PSON# (Power Supply On), 5VSB (5 Volt Standby) and PWRBT# (Power Button). The +/- 12V, +/-5V, +3.3V and Ground signals are not shown.



Power Supply and SHB Interaction

The following diagram illustrates the interaction between the power supply and the processor. The signals shown are PWRGD (Power Good), PSON# (Power Supply On), 5VSB (5 Volt Standby) and PWRBT# (Power Button). The +/- 12V, +/-5V, +3.3V and Ground signals are not shown.



multiple ground lines run from the PS to the motherboard

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- You can use a "known good" power supply to power up a computer by connecting its various cables to the appropriate locations on the motherboard.
This will let you determine if the problem is the existing power supply.

TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER (continued)

- ATX power supply interconnects to the ATX motherboard:
5VSB (= 5 volts standby) line from the power supply is always on and powering up circuitry inside the motherboard, even when the computer is not powered on and booted up. There is no indication on most motherboards that the line is active.

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- ATX power supply interconnects to the ATX motherboard (continued):
When the you depress the (front) push button for a fraction of a second, the always-on circuitry of the motherboard shorts "Power Supply On" to the Ground line and keeps this line grounded.

TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER (continued)

- ATX power supply interconnects to the ATX motherboard (continued):
After it detects that it's other voltage lines are operational and stabilized, the power supply brings the "Power Good" line up to +5 volts and the rest of the circuitry in the motherboard starts to power up

TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER (continued)

- You can use a "known good" power supply to power up a computer by connecting its various cables to the appropriate locations on the motherboard.
This will let you determine if the problem is the existing power supply.

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- If you remove a suspected power supply from a computer, you can test it "in situ" by attaching a load resistor or by attached 2 or more spare internal hard drives (as a load) and shorting two pins on the main "ATX" cable of the power supply:

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- To test most ATX power supplies, you probably have to put a "load" such as attaching two spare hard drives on it and then short two pins as described at <http://marcomiltenburg.com/2011/09/18/how-to-test-an-atx-power-supply/>

TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER (continued)

- The inexpensive "Power Judge" device does a good job of testing ATX power supplies:



Power Judge ATX Power Supply Tester w/Over Voltage Detection

by [Powmax](#)



[2 customer reviews](#)

Price: **\$8.40** & **FREE Shipping**

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- Power Judge ATX power Supply Tester with Over Voltage Detection General Features:
- Over voltage detection 20 + 4 pin power supply connector testing
- Suitable for 20 or 24 pin power supply F.D.D. / H.D.D. connector testing
- Voltage function indicator (+3.3v, -12v, -5v, +12v, +5v, +5vsb) Intelligent analysis indicator
- Helps prevent accidental damage to your computer

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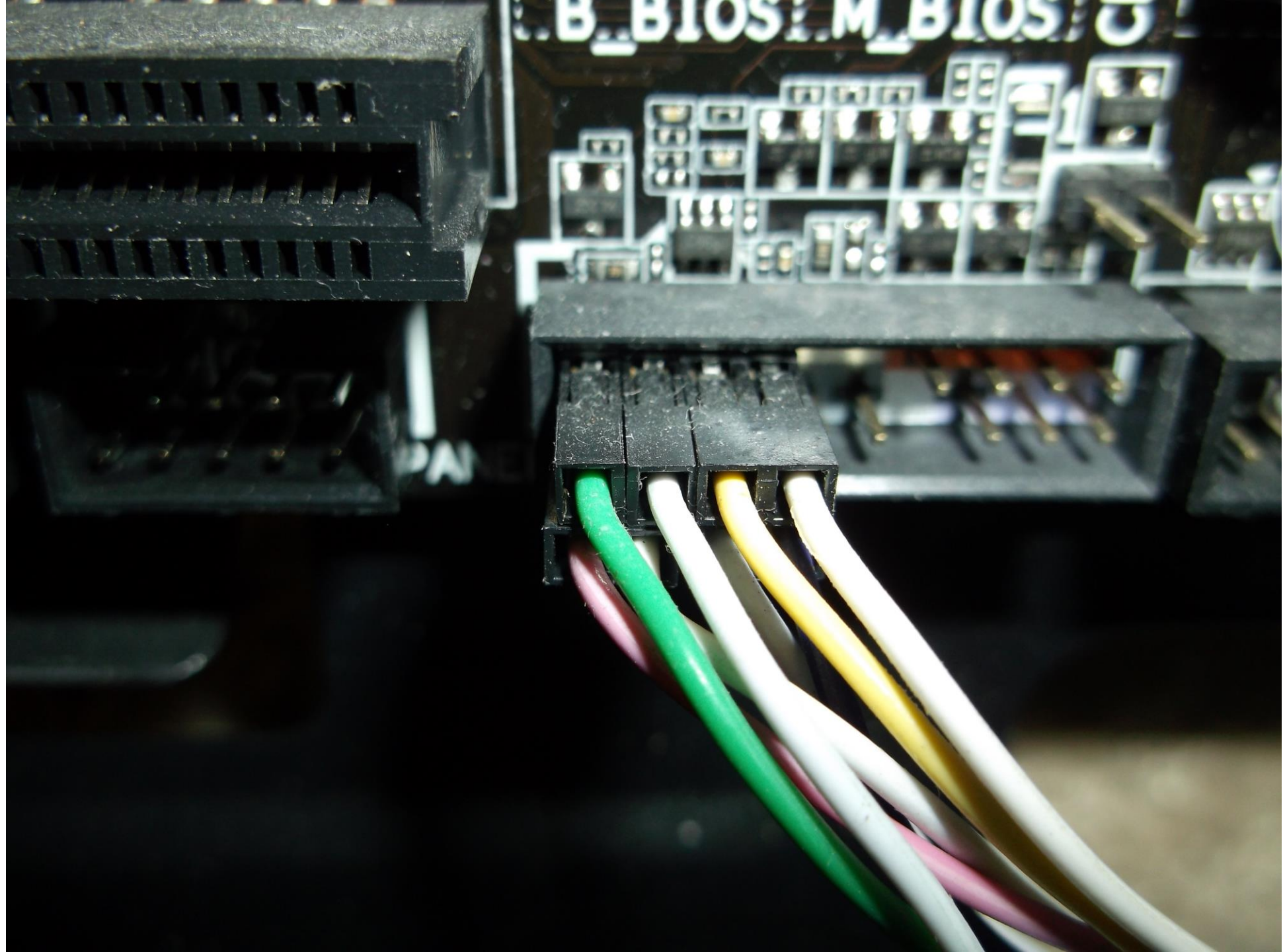
TROUBLESHOOTING A "WINDOWS.."

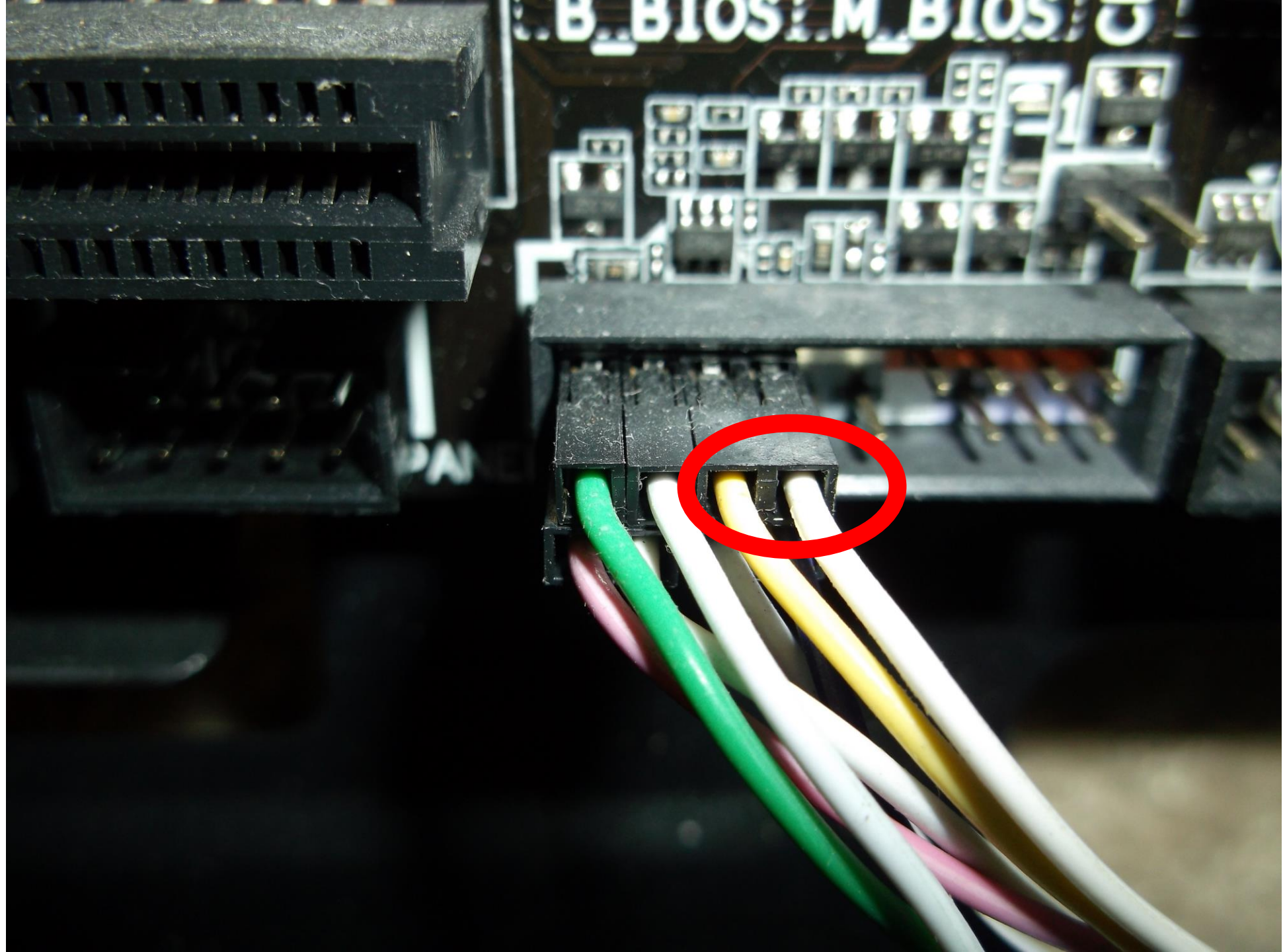
DESKTOP COMPUTER (continued)

- Sometimes the front push-button power switch of a desktop Windows.. computer fails and you can replace it for a few dollars. If you are very, very short on money, you can re-use the "Reset" push button switch which is also on the front of your computer.

See

<http://ccm.net/forum/affich-31107-my-desktop-computer-will-not-start>

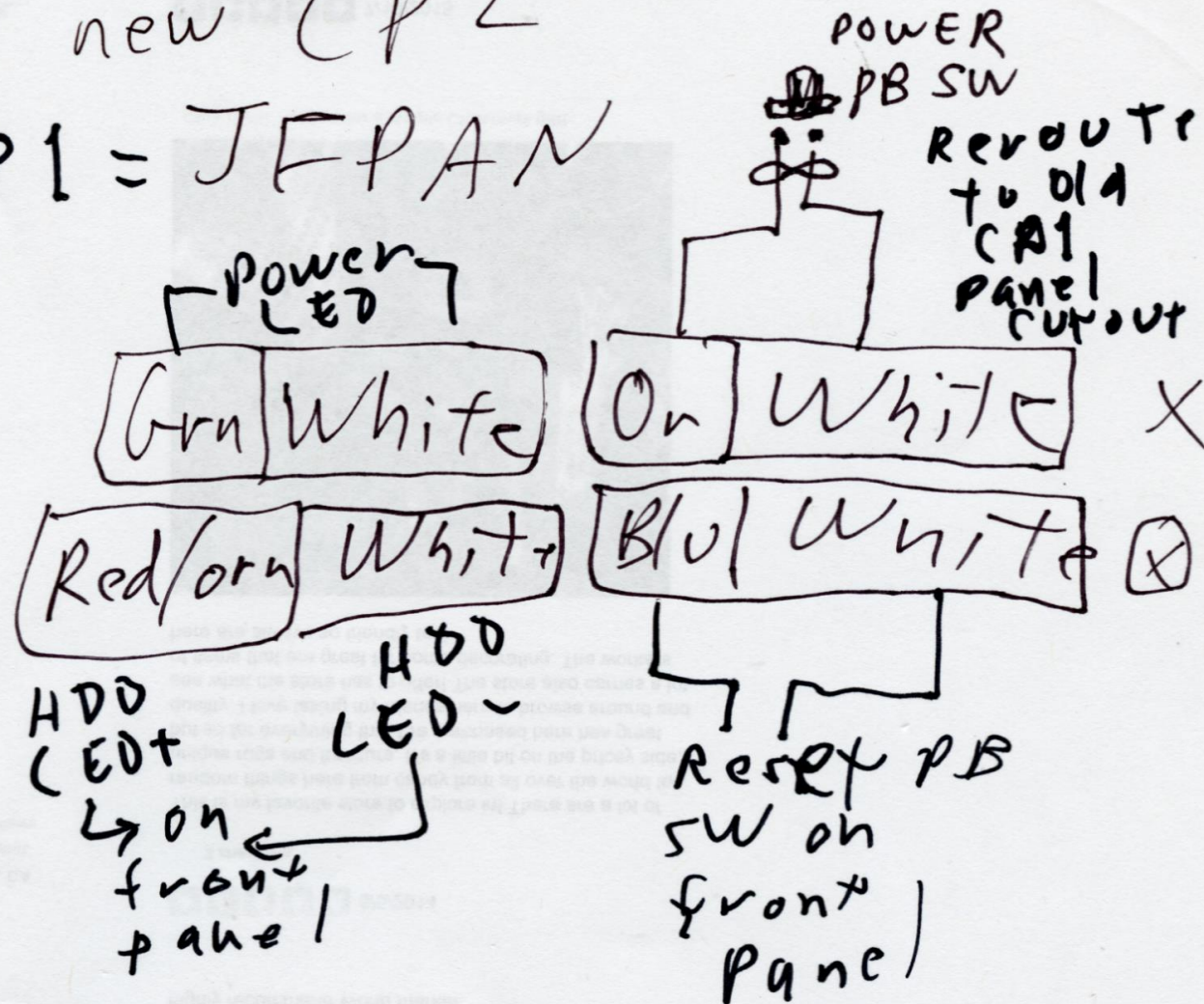




10-12-2016

new CP2

JFP1 = JEPAN



TROUBLESHOOTING A "WINDOWS.."

DESKTOP COMPUTER (continued)

- The electrolytic capacitors on most motherboards eventually fail. You can replace these capacitors on the older models of motherboards:

See

<http://www.instructables.com/id/How-to-repair-capacitors-on-computer-motherboards/>

TROUBLESHOOTING A "WINDOWS.." DESKTOP COMPUTER (continued)

- See also <http://www.computerhope.com/issues/ch001547.htm>:
If you see white goo or powder oozing from a capacitor, the capacitor has probably failed:



TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER

- Start off with the procedure "Basic Troubleshooting of any computer" at the beginning of this how-to document.

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- Try running the laptop with just the power adapter but with the battery removed.

A defective battery can cause a laptop to fail to start up.

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- With the battery still removed but the power adapter still connected, try wiggling the power plug that is plugged into the power jack while pressing on the power button

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- Some laptops have a "Reset" pinhole that you can jam a paperclip or small screwdriver into.

See

<https://www.ifixit.com/Answers/View/138299/un+able+to+start+laptop+while+pressing+power+button>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD OF LAPTOP:
Disconnect the power adapter.
Disconnect all USB and Expresscard
devices
Remove the battery.
Hold down the "Power" button of the
laptop for 5 minutes.

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued) :
Re-connect the power adapter but not re-install the battery.
Press the Power button for at least 2 seconds and see if the laptop will boot up.
If it will boot up, reconnect the battery and see if it will boot up.

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
The procedure for resetting a system board works for Acer laptops.

See

<https://tektype.wordpress.com/2011/09/21/my-acer-laptop-wont-turn-on-what-should-i-do/>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
Works for Asus laptops.

See

<http://ccm.net/forum/affich-40158-asus-laptop-does-not-power-up>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
The procedure for resetting a system board works for Dell laptops:

See

<http://en.community.dell.com/support-forums/laptop/f/3518/t/19497817>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
The procedure for resetting a system board works for Hewlett Packard laptops:
See
<http://support.hp.com/us-en/document/c01684768>
and <http://smallbusiness.chron.com/reset-hp-laptop-holding-down-power-button-battery-out-56662.html>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
The procedure for resetting a system board also works for Hewlett Packard laptops (continued):

See also

<http://www.nashvillecomputerguru.com/knowledge-base-faq/troubleshoot-laptops-that-dont-start/>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
There is a special procedure for IBM and
Lenovo Thinkpads:

See

<http://www.masnick.com/2007/09/07/the-secret-thinkpad-powerbutton-code-to-bring-dead-laptops-back-to-life/>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- RESET THE SYSTEM BOARD (continued):
There is a special procedure for IBM and
Lenovo Thinkpads (continued):
**"unplug the AC adapter and take out the
battery. Then, you push the power button 10
times in a row at one second intervals. Next,
you push and hold the power button for 30
seconds. Then you put the battery back in
and push the power button... and she lives.
The computer came back, good as ever."**

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- There is a special procedure for a Microsoft Surface Tablet:

See

<http://www.lovemysurface.net/your-surface-wont-start-tip-of-the-week/>

TROUBLESHOOTING A "WINDOWS.." LAPTOP COMPUTER (continued)

- There is a special procedure for a Toshiba laptop:

See

<http://crashcloud.com/how-to-reset-a-toshiba-laptop-back-to-factory-settings/>

TROUBLESHOOTING A MAC "OS X" COMPUTER

- Start off by following the steps in "Basic Troubleshooting of Any Computer" at the start of this how-to document

TROUBLESHOOTING A MAC "OS X" COMPUTER (continued)

- Any dust-clogged fan will stop most Mac "OS X" computers from booting up so use a gentle means to clean the vents and filters

TROUBLESHOOTING A MAC "OS X" COMPUTER (continued)

- For the meaning of various beeping sound warnings when you start up a Mac "OS X" computer, see <http://computers.tutsplus.com/tutorials/help-my-mac-wont-turn-on--mac-44524>

TROUBLESHOOTING A MAC "OS X" COMPUTER (continued)

- Follow the Apple company's detailed advice at <https://support.apple.com/en-us/HT204267>

TROUBLESHOOTING A MAC "OS X" COMPUTER (continued)

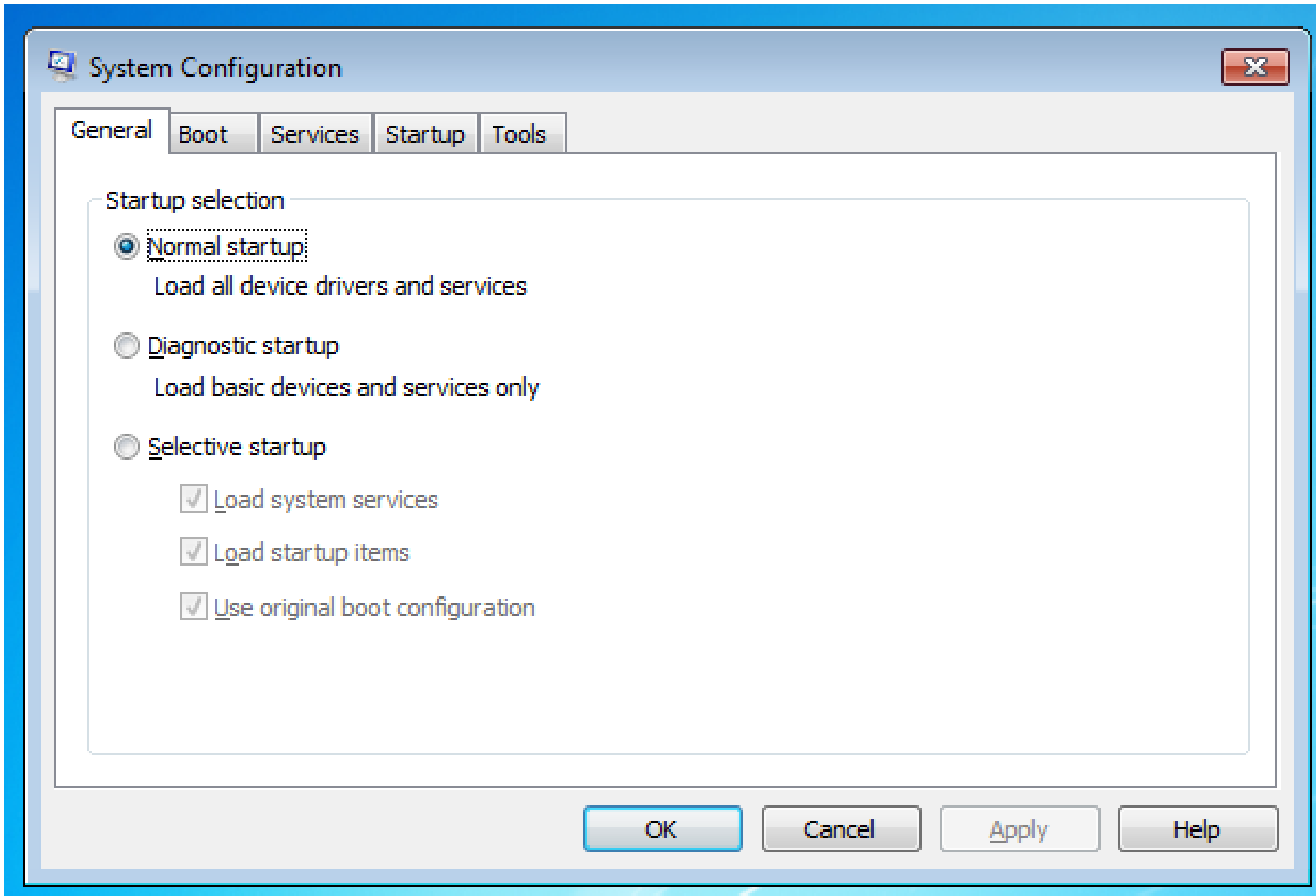
- Reset the "System Management Controller" (SMC) by following the detailed instructions at <https://support.apple.com/en-us/HT201295>

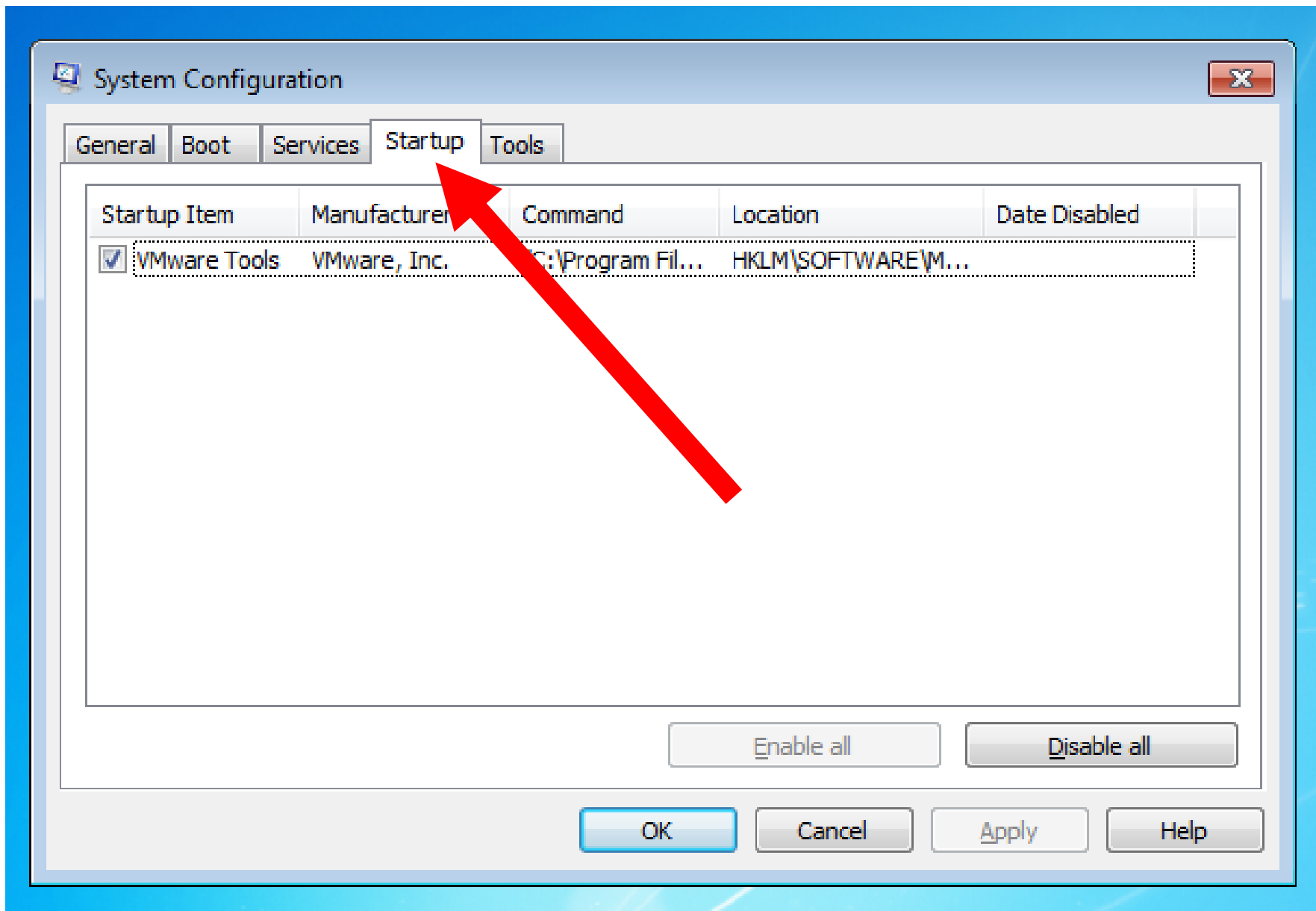
TROUBLESHOOTING A MAC "OS X" COMPUTER (continued)

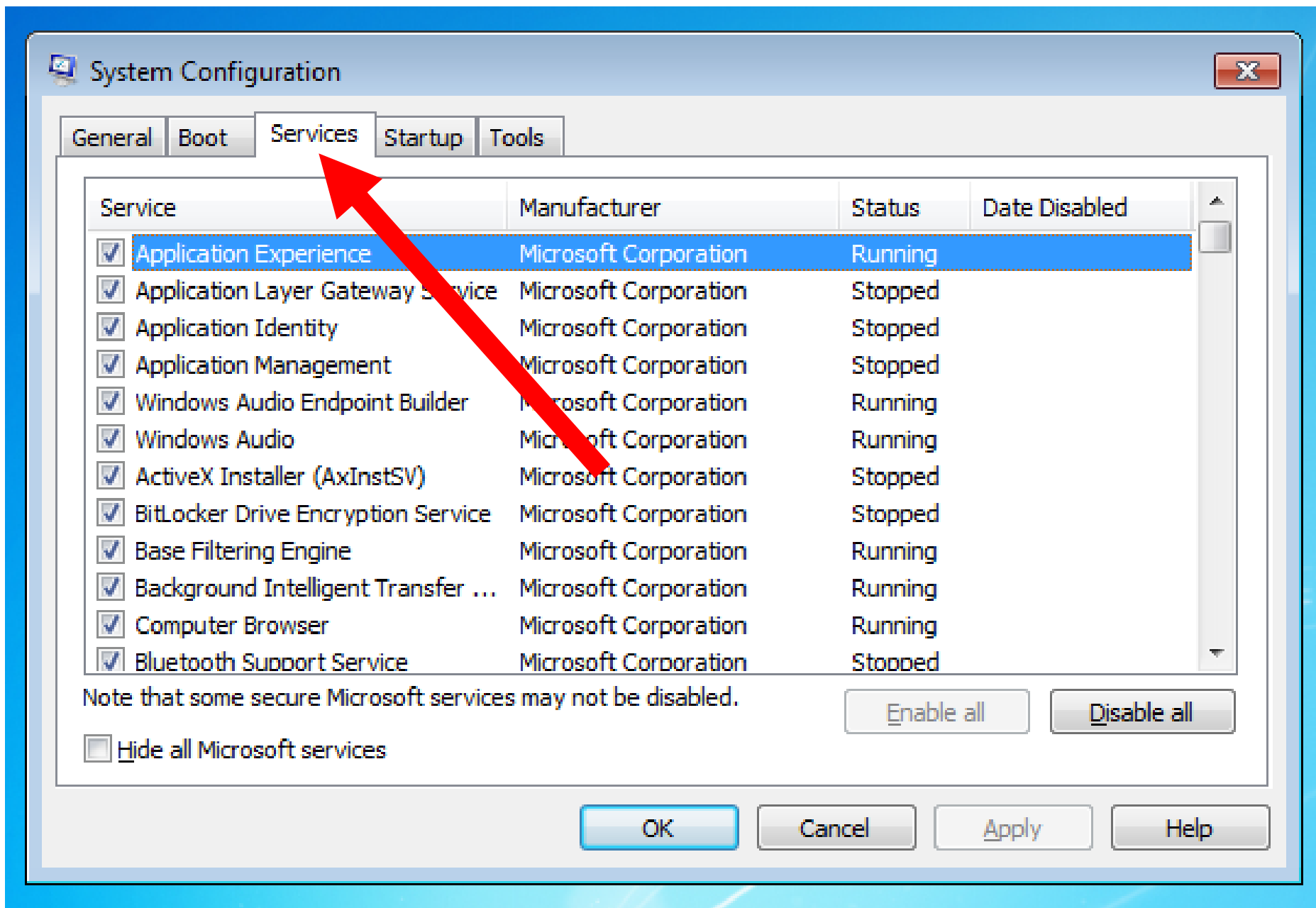
- Reset the "Non-Volatile Random Access Memory" (NVRAM) by following the detailed instructions at <https://support.apple.com/en-us/HT204063>

DO NOT USE "msconfig.exe" FOR PERMANENT CHANGES!

- Everybody loves the "Windows.." utility called "msconfig.exe" which is also called "System Configuration":

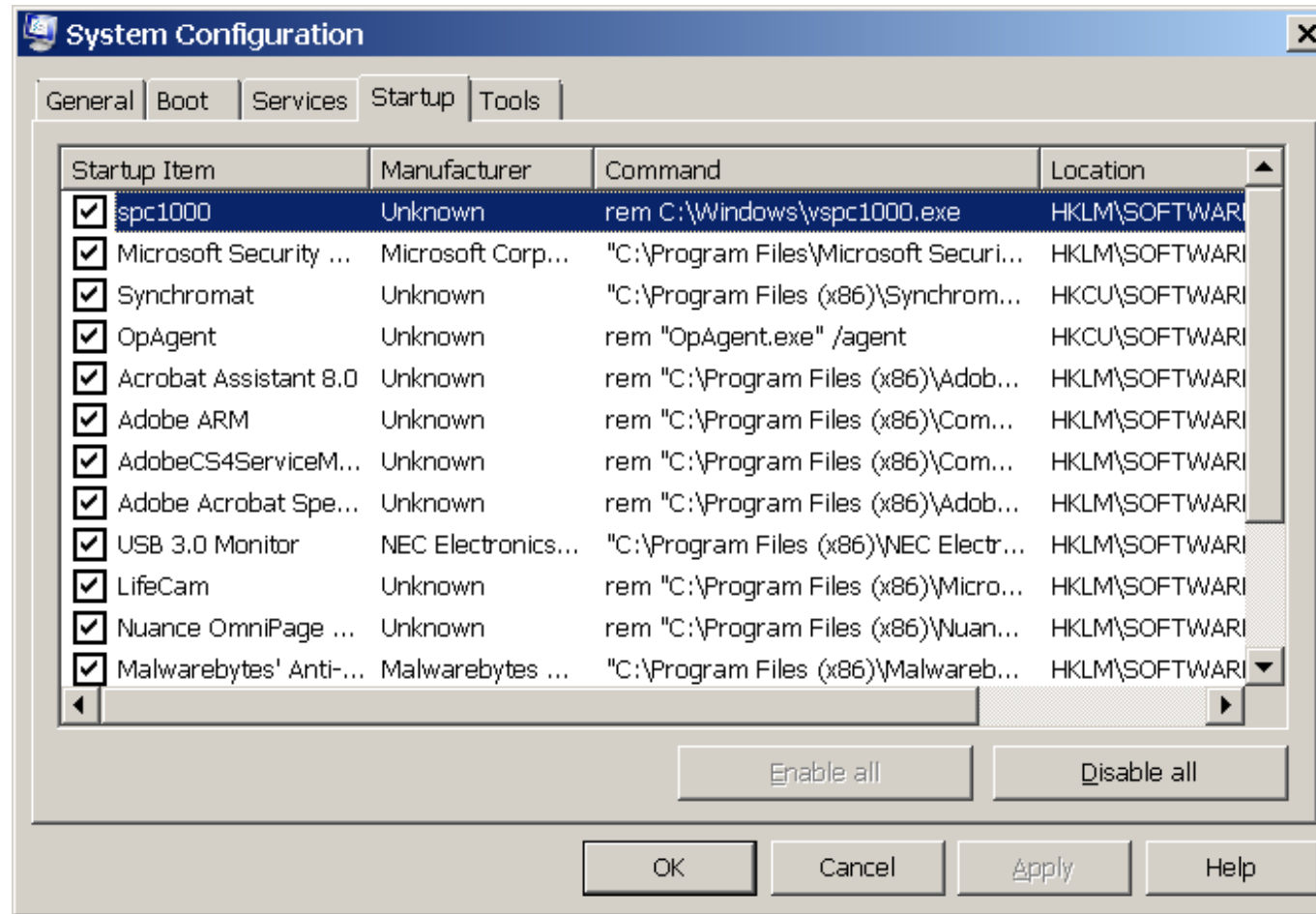






DO NOT USE "msconfig.exe" FOR PERMANENT CHANGES! (continued)

- It has a "Startup" tab for disabling some of the startup programs in your computer:



DO NOT USE "msconfig.exe" FOR PERMANENT CHANGES! (continued)

- The reasons for not using "msconfig" to permanently disable startup programs in a "Windows.." computer can be found at <http://forums.majorgeeks.com/showthread.php?t=149804> and <http://www.bleepingcomputer.com/forums/t/87058/slow-computerbrowser-check-here-first;-it-may-not-be-malware/>

You should not use msconfig to disable startup applications related to services.
*Doing so alters the registry and there are services that are essential for hardware and booting. When you uncheck a service in msconfig, you completely disable it. **If you uncheck the wrong one, you may not be able to restart your computer.** You should only disable services using the Services Management Console.*

DO NOT USE "msconfig.exe" FOR PERMANENT CHANGES! (continued)

- In "Windows 8", "Windows 8.1", and "Windows 10" computers, instead of using "msconfig.exe" to disable startup programs: Press "Ctrl + Shift + Esc" on the keyboard. (The Esc key has to be pressed last.) Click on "More details" if you do not see the "Startup" tab. Click on the "Startup" tab. Right click on any "startup process" that you wish to disable.

DO NOT USE "msconfig.exe" FOR PERMANENT CHANGES! (continued)

- In "Windows 7", "Windows Vista", and "Windows XP" computers, instead of using "msconfig.exe" to disable startup programs follow the step-by-step instructions at http://aztcs.org/meeting_notes/winhardsig/speedupWindows/startup_programs.pdf

Questions?

WHAT SHOULD YOU DO IF YOUR
COMPUTER WILL NOT BOOT?

by
Francis Chao
fchao2@yahoo.com

Winners Windows Users of California
Tucson Computer Society
Greater South Bay PC Users Group
APCUG Online Services



An International
Association of Technology
& Computer User Groups