The ultimate processor upgrade guide for all Asus P2B and P3B boards

This guide should help you to find out which cpu will work in your Asus P2B (-N/-L/-S/-LS/-D/-DS/-D2/-F/-B/-98-XV/-VM) or P3B (-F/-1394) board and what it needs to make it work. Not only officially supported upgrade options are covered, but also the unofficial ones.

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Q: What cpu upgrades are available which are officially supported by Asus?
A: If you ask this question, you should probably look at the official asus faq (in german), not this guide here (some information is also available from the international pages, but it is not exactly the same and misses the pcba number information). But it is answered later in the big overview table anyway.

Q: Which cpu upgrades are available overall (including not officially supported ones)?

CPU/Board	old P6 SEP	old P6 PPGA	old PIII 133	coppermine 100 SEC	coppermine 133 SEC	coppermine 66-100 fcpga	coppermine 133 fcpga	tualatin 100	tualatin 133
P2B rev. < 1.12	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P2B rev. >= 1.12	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1
P2B-D/-DS rev. < 1.06 pcba D03	Y/D	Y1/D	NC/D	N1/D	N1/NC/D	Y3/D	NC/Y3/D	M2/D	NC/M2/D
P2B-D/-DS rev. >= rev. 1.06 pcba D03	Y/D	Y1/D	O/D	Y/D	O/D	Y2/D	O/Y2/D	M1/D	O/M1/D
P2B-D2 rev. < 1.02 pcba A18	Y/D	Y1/D	UC/D	N1/D	N1/UC/D/O	Y3/D	UC/Y3/D	M2/D	UC/M2/D
P2B-D2 rev. >= 1.02 pcba A18	Y/D	Y1/D	UC/D	Y/D	UC/D/O	Y2/D	UC/Y2/D	M1/D	UC/M1/D
P2B-L/-S/-LS rev. < 1.04 pcba D02	Y	Y1	NC	N1	N1/NC	Y3	NC/Y3	M2	NC/M2
P2B-L/-S/-LS rev. == 1.04 pcba D02	Y	Y1	NC	Y	NC	Y2	NC/Y2	M1	NC/M1
P2B-L/-S/-LS rev. > 1.04	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1

pcba D02									
P2B-VM rev. < 1.02 pcba A09	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P2B-VM rev. > 1.02 pcba A09	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1
P2B-98XV	Y	Y1	98	N1	N1/98	Y3	98/Y3	M2	98/M2
P2B-B rev. < 1.02	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P2B-B rev. >= 1.02	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1
P2B-N rev. < 1.04	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P2B-N rev >= 1.04	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1
P2B-F old vreg F)	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P2B-F new vreg F)	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1
P3B-1394 old vreg 13)	Y	Y1	O	N1/B	N1/O	Y3/B	O/Y3	M2/B	M2/B
P3B-1394 new vreg 13)	Y	Y1	O	Y/B	O	Y2/B	O/Y2	M1/B	M1/B
P3B-F rev. < 1.03	Y	Y1	O	N1	N1/O	Y3	O/Y3	M2	O/M2
P3B-F rev. >= 1.03	Y	Y1	O	Y	O	Y2	O/Y2	M1	O/M1

F) P2B-F rev. 1.00 with a new voltage regulator chip have pcba numbers A0A, A0B, A1A, A1B, A2A, A2B, A33, A34, A43, A44, A53, A54.
13) P3B-1394 with a new voltage regulator chip are rev. 2.01 with pcba number A13 or higher and rev. 2.02 with pcba number B03 or higher.

Explanations:

Y: Officially supported (information taken from asus.de - you can get similar information from the english website, but it misses pcba numbers and it does not match the information on that faq in all cases). Just plug it in.
Y1: Officially supported. You need a slotket adapter, anyone (even ppga only very cheap ones) should be sufficient, but I'd still recommend one of the better slotkets.
Y2: Officially supported. You need a slotket adapter which must be fcpga compliant (but doesn't need to have voltage adjustment jumpers necessarily).
Y3: Not officially supported, but no known problems other than that you need a slotket adapter which must be fcpga compliant and must have voltage adjustment jumpers, which must be set to 1.8V. See list of recommended adapters. If you have an adapter which is fcpga compliant but has no voltage adjustment jumper, it might be possible to resolder it, but this is not recommended. See also differences of boards with the same revision.
N1: does not work because the board cannot supply voltages below 1.8V. See the question about running slot1 cpus on such boards, but only do this if you like hardware mods. See also differences of boards with the same revision.
B: this board suffers from the famous multiplier bug which was fixed on P2B-x boards, but the latest beta bios for this board is very old. Coppermines with a 11x multiplier will only run at 66Mhz FSB. At least the 1.30Ghz Celeron is reported not to work, the other Tualatins probably won't work neither, though the 1.0A Celeron might thanks to its 10x multiplier (unconfirmed).

D: This only applies for dual cpu setups. See dual issues.
O: Overclocked. See also issues with 133Mhz FSB.
NC: Clockchip cannot supply 133Mhz FSB. This means you would end up running your cpu underclocked (a PIII 667/133Mhz FSB would thus run at 500Mhz/100Mhz FSB).
UC: Unknown if the clockchip can supply 133Mhz FSB (no documented jumper settings). Might be possible, but probably unlikely (you could look at the model number of your clock chip and with the help of the datasheet it should be possible to find it out). Even if it works, this is still overclocked of course.
98: This board only has a jumper for setting 66 or 100Mhz FSB. But at least some of these boards (might depend on revision) are known to have a clockchip which can supply 133Mhz bus clock, so you could use software (softfsb, only available for Windows (9x only?) to get 133Mhz FSB (this is of course still overclocked, so look under O).
M1: You need a tualatin compatible slotket like the powerleap pl-ip3/t (preferably the version 2.0), powerleap SlotWonder or the upgradeware SLOT-T. Or you could modify the cpu if you use a different quality slotket which is not tualatin compatible. See the question about tualatins.
M2: This is the same as M1, except that neither the cpu modification nor using the SLOT-T is recommended at all since you'd need to run the tualatin at 1.8V, so you should use the pl-ip3/t. See also differences of boards with the same revision.

Q: How do the cpu names mentioned in the table refer to actual cpus?

old P6 SEP: this includes all Slot1 cpus manufactured with 0.35um or 0.25um technology, some of them have 66Mhz FSB, some 100Mhz. PII (models "Klamath" and "Deschutes", with 512KB external half-speed cache), the PIII "Katmai" (with 512KB half-speed cache) and Slot1 Celerons "Covington" (no cache) and "Mendocino" (128KB full-speed cache). The actual model numbers are:
PII 233, 266, 300, 333, 350, 400, 450 Mhz
Celeron 266, 300, 300A, 333, 366, 400, 433 Mhz
PIII 450, 500, 550, 600 Mhz

old P6 PPGA: the old Celeron "Mendocino" (128KB full-speed cache, 0.25um) in a ppga package. Model numbers:
Celeron 300A, 333, 366, 400, 433, 466, 500, 533 Mhz

old PIII 133: the "Katmai" (512KB half-speed cache, 0.25um) PIII with 133Mhz FSB in a Slot1 package. Model numbers:
PIII 533B, 600B Mhz

coppermine 100 SEC: the "Coppermine" PIII (256KB full-speed cache, 0.18um) with 100Mhz FSB in a Slot1 package, not including the 1.1Ghz part:
PIII 550E, 600E, 650, 700, 750, 800, 850 Mhz, 1 Ghz

coppermine 133 SEC: the "Coppermine" PIII (256KB full-speed cache, 0.18um) with 133Mhz FSB in a Slot1 package:
PIII 533EB, 600EB, 667, 733, 800EB, 866, 933, 1B Ghz, 1.13 Ghz (the 1.13 Ghz was withdrawn, so better forget about it)

coppermine 66-100 fcpga: this includes the 100Mhz FSB "Coppermine" PIII (256KB full-speed cache, 0.18um) and the 66/100Mhz FSB "Coppermine" Celerons (128KB full-speed cache, 0.18um) in the fcpga package:
PIII 500E, 550E, 600E, 650, 700, 750, 800, 850, 900 Mhz, 1, 1.10 Ghz

Celeron (66Mhz FSB) 533A, 566, 600, 633, 667, 700, 733, 766 Mhz
Celeron (100Mhz FSB) 800, 850, 900, 950 Mhz, 1, 1.10 Ghz (900 Mhz and up also in fcpga2 package)

coppermine 133 fcpga: the PIII "Coppermine" (256KB full-speed cache, 0.18um) with 133Mhz FSB in a fcpga package:
PIII 533EB, 600EB, 667, 733, 800EB, 866, 933 Mhz, 1B Ghz

tualatin 100: the Celeron "Tualatin" (256KB full-speed cache, 0.13um) with 100Mhz FSB in a fcpga2 package:
Celeron 1A, 1.10A, 1.20, 1.30, 1.40 Ghz

tualatin 133: the PIII "Tualatin" (256KB full-speed cache, 0.13um) and PIII-S (512KB full-speed cache, 0.13um) in a fcpga2 package:
PIII 1A, 1.13, 1.20, 1.33 Ghz
PIII-S 1.13, 1.26, 1.40 Ghz

Q: Are there differences between boards even if they have the same revision (or even same pcba number)?
A: Yes there are. Most notable are the P2B rev. 1.10, the P2B-D/-DS rev. 1.06 pcba D01/D02 (and even some 1.05 boards) and the P2B-F (those with the not supported pcba numbers for coppermines) boards, some of these boards indeed have the newer voltage regulator chips and thus can run slot1 coppermines (and fcpga coppermines with slotkets without voltage adjustment jumpers) just fine. See question about voltage regulator chips.

Q: How do I find out the board revision / pcba number?
A: Unfortunately it is not possible to do this with a software tool. You have to look at your board. The board revision is printed between the pci slots, the pcba number can be found on the sticker which should be on one of the ISA slots (pictures where to find this information from asus.de).

Q: How do I find out which voltage regulator chip I have and what voltages it can provide?
A: You need to look at the board. Near the Slot1 connector there is a chip with around 30 pins or so. Some of these chips can provide 1.3V-3.5V, while others can only provide 1.8V-3.5V. Attention, dual-cpu boards have two voltage regulator chips, and it is possible that one is of the new type and the other not!
Chips that can provide voltages down to 1.3V:
HIP6019BCB
HIP6020ACB
HIP6004CB
HIP6004BCB
US3007CW

Chips that can only provide voltages down to 1.8V:
HIP6019CB
HIP6004ACB

This list is not complete. Asus has used quite a lot of different voltage regulator chips on its boards, so it's possible there are even more that Asus used I'm not aware of.

Q: How do I set up the multiplier jumpers correctly for a fast PIII/Celeron, since they go only up to 6/7/8?
A: You don't need to set the multipliers, unless you have an early PII. The multiplier of all newer cpus is completely locked, changing it on the board won't have any effect at all. The only exception to this are unlocked engeneering samples of cpus, but these are never sold (there is "intel confidential" written on them). If you really have such a chip, you would have to set the multipliers, which is possible on all of these boards, but not documented (there are undocumented jumper settings, plus the higher multipliers are remapped to the lower ones, so for multiplier 10 you'd have to jumper it for 3 or something the like).

Q: How do I set the FSB to 133Mhz? Doesn't this seriously overclock everything?
A: Look at your motherboard manual, it should have printed all possible FSB settings on the pcb - you could also look at your manual instead, but in some cases the information might not be the same. 133Mhz is not possible on all boards, and unfortunately it's not very easy to tell which boards will run 133Mhz FSB and which won't. Additionally, some boards might need minor hardware modifications to support a 33Mhz PCI clock (instead of 44Mhz) when using 133Mhz FSB.
As a rule of thumb, if there is no printed 133Mhz setting on the board, it probably won't do 133Mhz at all because the clock chip just can't do it, not even if you're using undocumented jumper settings (in particular the ics9150-08 clock chip won't work at 133Mhz, even though according to the datasheet it has a 133Mhz FSB / 33Mhz PCI "performance not guaranteed" setting).
Boards which have 4 FSB jumpers (such as P2B 1.10 and later) should work at 133Mhz FSB / 33Mhz PCI.
Boards which have 3 FSB jumpers and a documented (printed on the pcb) 133/33 setting (such as P2B early revisions) should also work at 133Mhz FSB / 33Mhz PCI. They have a clockchip which has only 3 jumper frequency selection inputs, such as the ics9148-26 - in contrast to the ics9150-08 mentioned above it has a "performance not guaranteed" 133/33 setting which works.
The last category of boards are those which need hardware modification to have a PCI clock of 33Mhz together with 133Mhz FSB. They have clock chips with 4 frequency selection inputs (such as ics9250-08), but only 3 of them are wired on the board. At least P2B-L/S/LS rev. 1.04 D03, P2B-D/DS rev. 1.06 D03 and some early revision P2B-f belong to that category. They will all run the pci clock at 44Mhz if you chose 133Mhz FSB - you're very likely to get trouble, as a lot of devices won't work at that clock frequency. Keep in mind that even onboard peripherals (and the IDE bus) run at that clock, so take care of your data if you still want to try it! However, not all hope is lost, since it's possible to modify these boards so that they can run at 133Mhz FSB / 33Mhz PCI clock. Some boards (early P2B-f, P2B-L/S/LS rev. 1.04 D03) already have room for the 4th FSB frequency selection jumper, instructions for modifying them can be found here.
Others (P2B-D/DS rev. 1.06 D03) require a bit more work, because they don't have room for the additional jumper on the pcb.
Apart from the cpu (if it isn't a 133Mhz FSB version) the 133Mhz FSB however is an overclocked setting not only for the chipset, but also for the memory system. Quality pc133 sdram often works fine at 133Mhz in bx-based boards, at least if you don't use more than 2 modules - 3 might work too, but 4 unregistered modules likely won't work. This is especially true if you have a P2B-D/DS board, as those slightly undersupply the i/o voltage (you can change that if you want) in contrast to most other asus bx based boards which typically have a slightly higher than specified i/o voltage. In some cases, however, even with boards which don't undersupply the i/o voltage, the ram just won't work correctly at 133Mhz, in rare cases even if you have only one module (often not all memory is recognized). It is unknown why some boards tolerate 133Mhz ram clock much better than others, the use of registered memory might fix that problem on boards which don't.
Most importantly, the AGP bus is also overclocked (the bx chipset has only ratios 1/1 and 2/3 for AGP to FSB, so running at 133Mhz FSB will result in 89Mhz AGP clock, which is 33% higher than the 66Mhz it should be). See faq about graphic cards upgrade on bx-based boards.
Such a 133Mhz FSB setup probably shouldn't be used in your 24/7 production server, although at least later revisions of all the P2B-xx and all P3B-xx usually show excellent stability at 133Mhz FSB (if you keep the restrictions just given in mind).

Q: Is it safe to run a coppermine cpu at 1.8V, after all some of them are rated for 1.5V only?
A: Yes this should pose no problems at all. The different coppermine steppings / speed grades are rated for 1.5V-1.75V, but the different voltage ratings have no

technical reason, so from a technical point of view, if you use a 1.5V cB0 stepping Celeron 566 at 1.8V this isn't more of an overvoltage than using a 1Ghz cD0 stepping PIII (which is rated for 1.75V) at 1.8V. The reason the voltage is different with different steppings is simply to make it possible to achieve higher speeds (later steppings have higher voltages - of course, there are other differences between steppings which make it possible to achieve even higher clock speeds). Also, some of the slower speed grades processors have a lower voltage than the higher speed grades processors of the same stepping just because they need less voltage to run stable at such low clock speeds.
And 1.8V compared to 1.75V (the voltage of the cD0 stepping) is really not much of an overvoltage (there was even a cB0 stepping PIII 1.13Ghz availabe which used 1.8V, but this one was withdrawn because it didn't run stable. But this proves 1.8V is a safe voltage for all coppermine chips). If you have a look at the datasheet, you will see that the absolute maximum voltage for all coppermine cpus is 2.1V (this is the voltage you **really** shouldn't go above).
But **make sure you set the voltage correctly on the slotket**, setting it e.g. to 3.5V will instantly fry a coppermine cpu, no matter how good the cooling is!
You may get (I'm not quite sure on which boards / which cpu stepping this happens) an error at boot that "Hardware monitor found an error" - this is harmless and can be ignored, switch off the warning by setting the vcore value in power management to "Ignore" (after you've verified it actually shows 1.8V).

Q: Is it somehow possible to run slot1 cpus in boards which can only provide down to 1.8V?
A: Yes it's possible, but it requires some work. The basic idea behind the modification is the same as if you would be using a slotket adapter and use the voltage selection jumpers to make the board believe the cpu wants a different voltage.
There are 5 voltage identification signals (called VID0 - VID4), which must be altered (you don't need to touch VID4). To do this, you must tape some pins on the slot1 connector, and connect some others. It depends on the default voltage of your cpu which pins you'll have to modify, there are 3 possibilities. In all cases, you need to change the VID coding to 1.8V, i.e. (VID0 to VID3, from left to right) 1 0 1 0. A "0" means the signal is connected to ground, a "1" means it is open.
1.7V cpus: The cpu VID coding is (VID0 - VID3): 1 1 1 0. Only VID1 is different from the target 1.8V VID encoding, so you have to alter only VID1 to a logical 0. To do this, you need to connect VID1 to ground. VID1 is pin A120 on the connector, connect this to the adjacent A121 pin using a thin u-shaped wire piece.
1.65V cpus: cpu VID coding is (VID0 - VID3) : 0 0 0 1, so both VID0 (pin B120) and VID2 (pin A119) must be changed from a logical 0 to a logical 1. This can be done by insulating them, so just tape them. Additionally, VID3 (pin B119) must be changed to 0, thus needs to be connected to ground. Unfortunately, there is no adjacent ground pin, so use an insulated wire to connect it to A121 (just "around the corner" of the edge connector).
1.6V cpus: cpu VID coding is (VID0 - VID3): 1 0 0 1. Connect VID3 (pin B119) to A121 using an insulated wire. Tape VID2 (pin A119).
More information on this mod (including the mandatory pictures) can be found at http://tipperlinne.com/p2b-ds. If you're curious, you can get information about all VID codings from the PII/PIII datasheets at developer.intel.com.
If you don't want to use wire tricks, there is also another method - replace the voltage regulator with one which can go below 1.8V (e.g. HIP6019CB and HIP6019BCB are pin-compatible). However, you'd need to get the newer regulator chip (probably from a defective board) and then exchange the chips, which you probably should only do if you're experienced with smd-soldering.
But don't come back and complain your board went up in smoke! It should be obvious you do all modifications on your own responsibility.

Q: How do I use Tualatin based cpus on a P2B / P3B board?
A: Intel and Asus will tell you it's not possible, but that's only half of the story. There are some minor incompatibilities in the bus interface (tualatins use AGTL, which has a voltage level of 1.25V, the BX uses AGTL+ with a voltage level of 1.5V) as well as some other differences. But none of these are really critical, the reason it won't work is because intel (intentionally) changed the cpu pinout slightly (to prevent system builders to plug in cpus in unsupported systems). There are basically two methods to get a tualatin to work in such a system:

1) use the powerleap adapter pl-ip3/t.This thing has its own voltage regulator, and is not a lot more complicated than a normal slotket to handle. However, it is quite expensive. There are also the upgradeware SLOT-T adapter, or the powerleap SlotWonder, which do not have their own voltage regulator, and are thus cheaper, but should not be used on boards which do not have a voltage regulator which goes down to 1.3V (since 1.8V is not a safe voltage for tualatins).
2) modify the cpu slightly. Definitely not for everybody, and since the cpu still uses the voltage regulator of the motherboard, the board should be capable of delivering down to 1.3V (I consider 1.8V, which is above the tualatins absolute maximum voltage, a very bad idea for these cpus). If you want to do this, you should read the thread at oc-forums about this mod (but I'd recommend doing ak4-aj5 if you use conductive silver paint instead of ak4-an11, because it's far easier to do). There are several websites available with detailed instructions, here's one (also available in german).
One little issue remains (at least on p2b family boards if you have hardware monitoring), you will get a warning at bootup that "Hardware monitor found an error". This is because the bios has a fixed range of voltages it accepts (without error) for a given cpu, and it's wrong for tualatins. You should just set the vcore value in power management to "Ignore" to get rid of that annoyance.

Q: Is a Bios update necessary if I want to upgrade the CPU?
A: That depends on your current bios version and the cpu you want to upgrade to. For correct recognition of the latest stepping coppermines, a recent beta is usually required, though it should boot fine with the latest final bios. But the latest beta (link has tendency to move unfortunately) is highly recommended. **If you want to upgrade to a cpu which has a multiplier of 11, 12 or 14 and a board of the P2B family, you MUST use bios version 1014 beta 3 because of a bug in all earlier bioses** (with an earlier bios you could only boot at 66Mhz FSB if the cpu has multiplier 11 or 12, and not boot at all if it has multiplier 14).
The recommended flash utility is aflash. If the downloadable version doesn't work on your P2B board (error message "unknown flash chip" or similar), try the version which was on the cd included with the motherboard. If you can't find the cd or this version doesn't work neither, you could use a flash program called pflash2.exe, which was also available at ftp://ftp.asuscom.de but apparently no longer is (pflash.exe will probably not work).
The latest 1014 beta 3 bios for p2b family boards does not contain microcode for the newest stepping tualatins (tB1). You can ignore the warning or patch your bios.

Q: What is the difference between fc-pga and fc-pga2?
A: Often "Tualatin" processors are referred to as fc-pga2 processors and "Coppermine" cpus as fc-pga processors. There is a lot of confusion if that's actually correct or not, and unfortunately intel didn't help to clear it up. Intel usually, but unfortunately not always, refers to the difference between fc-pga and fc-pga2 being just the packaging, the fc-pga2 having an integrated heatspreader (IHS), the fc-pga not. It is true "Tualatin" cpus always use fc-pga2 packaging, but some "Coppermine" cpus also use fc-pga2 packaging! As far as compatibility with a motherboard is concerned, the packaging of course doesn't matter, but it certainly matters if it is a Coppermine or a Tualatin. This document will use the term fc-pga2 to refer only to packaging difference.

Q: Recommended slotkets? Availability?
A: A slotket must be fcpga compliant and have voltage adjustment jumpers as a minimum requirement to get a recommendation here. There is an official list available from intel of "slot-to-socket adapters" (SSA) which passed or didn't pass their tests. But unfortunately having voltage adjustment jumpers isn't a requirement for intel of course, so some of the slotkets listed there won't have those jumpers.
Slotkets which are known to work reliable, are fcpga compliant and have voltage adjustment jumpers are:
Soltek SL-02A++ (taller than a normal Slot1 cpu, so you might have trouble fitting it into a case with a removable motherboard tray, dual ppga, but not dual fcpga capable)
Iwill Slocket II but only rev. 1.1 (don't know how tall it is, not sure about dual capabilities either), Iwill Slocket III should be fine too but doesn't seem to exist
Abit Slotket III (don't know how tall it is, supposed to be dual ppga and dual fcpga capable)

MSI 6905 ver. 2.3 (not sure how tall it is, dual ppga capable, not sure about dual fcpga), ver. 2.0 is probably ok too
Asus S370-133 (taller than a normal Slot1 cpu, dual ppga but not dual fcpga capable)
Asus S370-DL (the former king of the slotkets, low profile (not taller than a slot1 cpu), dual ppga and dual fcpga capable)
Upgradeware SLOT-T (not sure how tall it is, also works with tualatins if your board goes down to 1.3V, needs modification for dual coppermines and dual PIII-S operation, not ppga capable)
(Asus has a list of its slotkets and their differences, only the information about the voltage jumpers is missing)
Unfortunately I can't help with availability. Some time ago, it was easy to get one of the branded slotkets. Nowadays, the "normal" slotkets all are no longer available. Maybe you need ebay or something the like to get one. Your best bet is probably the Slot-T adapter, as it's still in production, not that expensive and even works with tualatins (if your board can handle the lower voltages). Powerleap adapters (PL-iP3/T or PL-P3/SMP) are also easily available, they can handle tualatins even if your board can't handle the lower voltages, but they aren't cheap. Powerleap also sells a newer adapter, the SlotWonder, which can handle tualatins but doesn't have its own voltage regulation (and thus is very similar to the Upgradeware Slot-T). That would be a good choice too though it seems it's more expensive than the Slot-T.

Q: To what settings should the jumpers be set on the slotket?
A: This depends on the slotket and your cpu. The possible jumper settings are usually printed on the back of the slotket. There are two settings which are important however most times:
The voltage (if your slotket has voltage adjustment jumpers). If you have a board not capable of delivering voltages below 1.8V, you need to set these jumpers to 1.8V if you want to use a cpu with a coppermine core.
The cpu type jumper. There is often a jumper called celeron/coppermine, which is a bit confusing, since for coppermine based Celerons (533A and higher) you **must set this to coppermine**. So, for old celerons (up to 533), use the celeron setting, for anything else (including newer Celerons, PIII, modified Tualatins) set it to coppermine. On some slotkets, the jumper might have a better name, like ppga/fcpga. In this case, set it to ppga for old Celerons, fcpga for anything else.
The FSB setting of the slotket can safely be ignored, since you need to set it on the board anyways (at least on the boards of the P2B family).

Q: USB devices or USB powered hubs don't work (sometimes) on my P2B-D/P2B-DS/P2B-D2/P2B-F (maybe others too), why?
A: Some of the early revision boards have a known design flaw which limits the amount of current through the USB bus too much. Unfortunately, no official information seems to be available what boards / board revisions are exactly affected.
If you have a revision 1.04 P2B-D/-DS, you need to replace the 4.7k Ohm resistor R112 with a zero Ohm resistor (or solder in a tiny wire between the contacts). R112 is located near the 440BX chip.
If you have a P2B-F, the 4.7k Ohm resistor you need to replace is R232, located at the end of pci slot 2.
The resistor could also be 47 Ohm instead, in this case USB might work fine in a lot of cases.
If you have a P2B-D2, I've not the slightest clue what number the resistor has, but reports seem to indicate this board is affected from this bug too.
If you have another P2B board, it is probably not affected. Given the similarities between all those boards, I wouldn't be surprised if some of the more exotic variants / revisions would be affected, however.
But before you heat up your soldering iron, make sure it's not a different reason why USB doesn't work. For instance, early bios versions of some of the boards have bugs which affects USB operation. Also check the obvious like USB switched on in the BIOS or that the OS actually supports USB (Windows 95A does not).
Asus did this fix for you, but I guess the warranty time of your board is over now.
It is of course also possible to use a PCI USB card instead, of course.

Q: What cpus can I use in a dual configuration in a P2B-D/-DS/-D2? Are there other dual cpu issues?
A: The Celeron Coppermine as well as the Tualatin PIII is not dual capable and will not work in a dual cpu setup. The Coppermine PIII (both fcpga/slot1) is dual capable as well as the Tualatin PIII-S and the Celeron ppga (this one only inofficially). The old Slot1 Celerons are not dual capable neither.
Keep in mind not only the cpus must be dual capable, but also the slotket! There are quite a lot of slotkets which are dual capable, but most of them only work in dual mode with the Celeron ppga. The only slotket certified for dual fcpga operation is the Asus S370-DL, some people also claim success with the Abit slotket III.
If you plan on using Windows XP / 2000 in ACPI mode (instead of standard mode) there is also a hardware bug present on most revisions of these boards which you probably need to fix (only if you use 2 cpus, and do this only if you're experienced in soldering SMD parts). More information can be found, as always, at asus.de (in german).
Asus used to fix the boards, but probably the warranty of your board has expired.
Historically there a lot more reported issues with cpu upgrades with dual processor configurations than with single processor configurations, but it is possible this is only due to the use of inappropriate slotkets.

Q: Photoshop hangs frequently and/or there are some occasional hangs in other programs which don't seem to be related to anything?
A: Some of the (usually early revisions only) P2B / P3B boards suffer from the so called "Photoshop bug" which has, in fact, nothing to do with Photoshop at all. Technically, it's an insufficient buffering of the bus termination voltage, which can cause voltage drops and thus hang the system. The reason it is named Photoshop bug is because the bug is not easily recognized, but using Photoshop reveals it, since it will crash frequently. Removing the "fastcore" and "mmxcore" files from the plugin directory of Photoshop should be used to help recognizing that bug (the freezes should disappaer). But remember, number one reason for unstable systems is usually crappy ram, so you should try exchanging that (or use at least a ram tester).
The problem seems to affect Katmai PIII more often than other cpus, but it's not very apparent why. It might be possible that some slotkets have additional buffering capacitors to stabilize the bus termination voltage, or that newer cpus use a lower maximum current on that voltage. So a cpu upgrade might fix the bug if you're lucky.
You could also fix the bug yourself if you're experienced with soldering. There are articles about this here (for a socket370 board) and another one was available here (for P2B-LS, but you really don't need a capacitor rated for 35V, 5V or so should be more than enough!), though apparently the article is no longer available unfortunately.
Asus did this fix for you, but I guess the warranty time of your board is over.

Q: Why does the slotket or slot1 cpu not really seem to fit into the SEC on the board?
A: There are different retention mechanisms around. If you have an old board revision, it probably shipped with a retention mechanism which is not compatible with newer slotkets/cpus. You can get a new URM (Universal Retention Mechanism) at computer shops, it shouldn't cost too much (you have to remove the board from the case to upgrade the URM however). Or you can run without the appropriate retention mechanism, as long as you don't move your computer around too much it should still remain in the SEC.

Q: But it doesn't work after the processor upgrade! Maybe there are errors in this guide?
A: Possible. I certainly didn't test all combinations... A lot of the information is however is backed up by the asus newsgroup, the rest is extrapolated from the manuals of the boards and the similarities between all those boards. I certainly can't guarantee you that your modified Tualatin, clocked at 133Mhz FSB will run stable (or at all) however of course.
Is is also possible something else went wrong with your upgrade. Things you could do to make it work finally:

Make sure the heatsink/fan is attached correctly to the cpu (it will not boot without a heatsink!).
Make sure the cpu/slotket makes good contact with the Single Edge Connector on the board (this is especially true if your slotket doesn't fit).
Try reinserting the agp graphic card and the ram modules (they might loose contact if you're fiddling around in your case, especially the agp slot is a bit tricky).
Use the CLRTC "Clear Real Time Clock" jumper on your board (you will lose all bios settings if you use it, so write them down if you need them). There are some reported cases this was necessary after a cpu upgrade.

Q: What is the biggest harddisk that can be used on the P2B / P3B boards?A: The biggest harddisk that can be used on any of the boards of the P2B or P3B family is 128GB (technically, this is not a board/chipset limitation, but a bios limitiation, however those boards won't get further bios updates). To get this to work, you likely need the newest beta bios (for most of these boards, the last released final bios is really ancient, for all boards of the P2B family the newest version is 1014 beta 3), download it at asus. (As a side note, the 128GB mentioned above are binary Gigabytes (2^28*512 Bytes = 2^37 Bytes), whereas harddisk manufacturers use decimal Gigybytes (128 binary GB = 137 decimal GB), so if you see a harddisk advertised as "135GB" it should work.)

Q: But I want to upgrade the ram or the graphic card, not the cpu!
A: There is a faq available which covers ram upgrades on any board with a bx chipset and also a faq which covers graphic cards upgrades on any board with a bx chipset.

Q: Where can I get more information?
A: Since this is the ultimate guide you don't need more information ;-). But more seriously, a very good source of information is the newsgroup alt.comp.periphs.mainboard.asus. Remember to search the archives with the group search of google before you ask a question. Chances are your question has already been answered.
You can also get a lot of information about all Asus boards on the (german) asus.de support site. If you're more interested in technical background, developer.intel.com has datasheets of cpus and chipsets, agp specifications and more. There is also an excellent site covering advanced topics like increasing ram voltage, different FSB/PCI dividers on some of these boards, especially recommended if you have a P2B-DS or a P2B-AE (which isn't covered here, it is a OEM board by Asus made for Sony).

Any comments, suggestions to Roland Scheidegger
Thanks to Simon Edwards for providing information about 133Mhz FSB settings on some boards.

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