

Coreboot: the view from the FSF

Denver, CO
2008-04-04

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What does the FSF want?





What does the FSF want?

free software





four freedoms





<http://flickr.com/photos/elmada/1730037734/>



oh, wait



The freedom to run the program,
for any purpose (freedom 0).





The freedom to study how the program works, and adapt it to your needs (freedom 1).





The freedom to redistribute
copies so you can help your
neighbor (freedom 2).





The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3).



1984



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<http://flickr.com/photos/pnoeric/1589796934/>

The GNU Project
Free Software, Free Society





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The GNU Project
Free Software, Free Society





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FOUNDATION

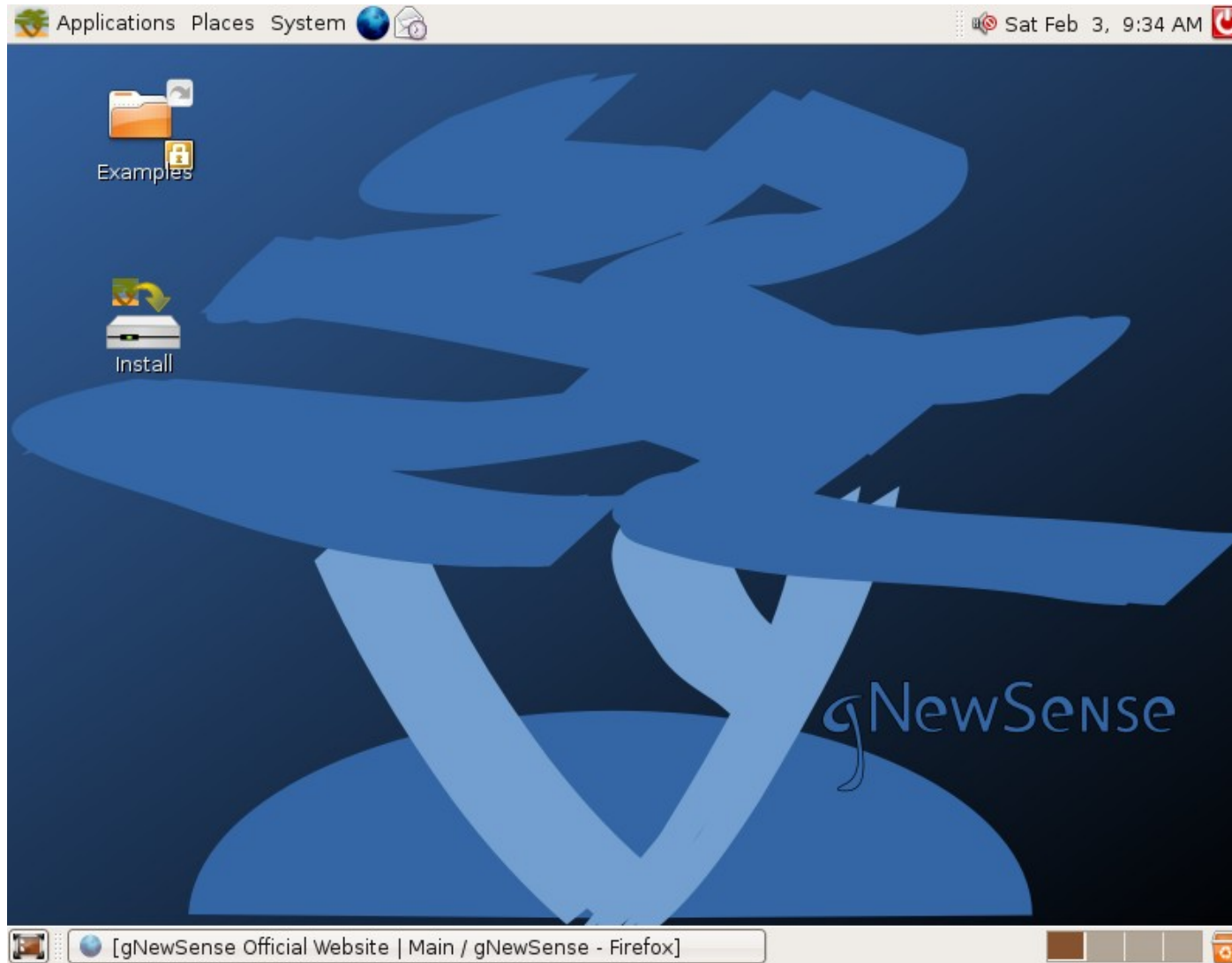
2008

The GNU Project
Free Software, Free Society





FREE SOFTWARE
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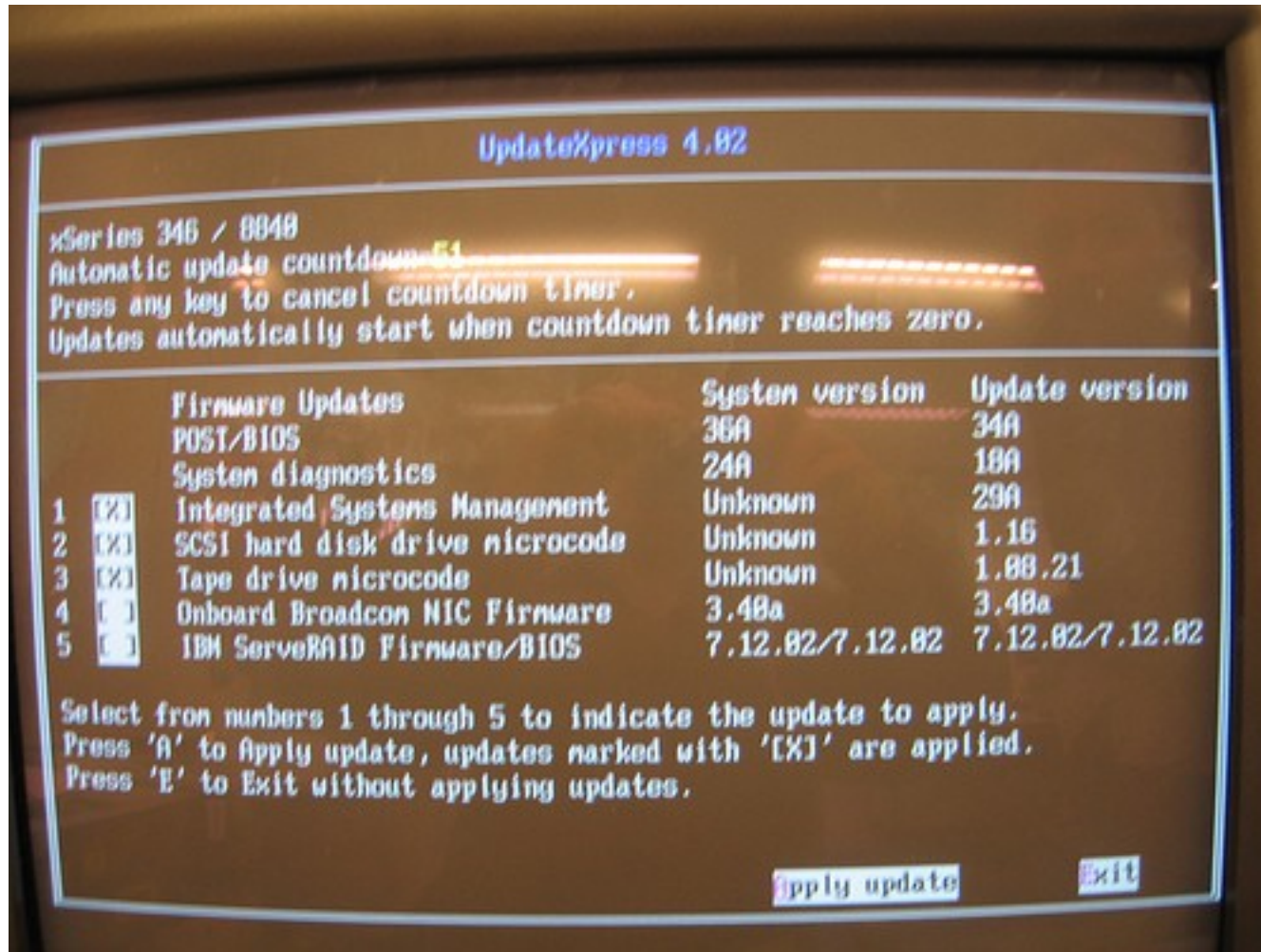
possible to run a computer with
100% free software...





... almost





“microcode”

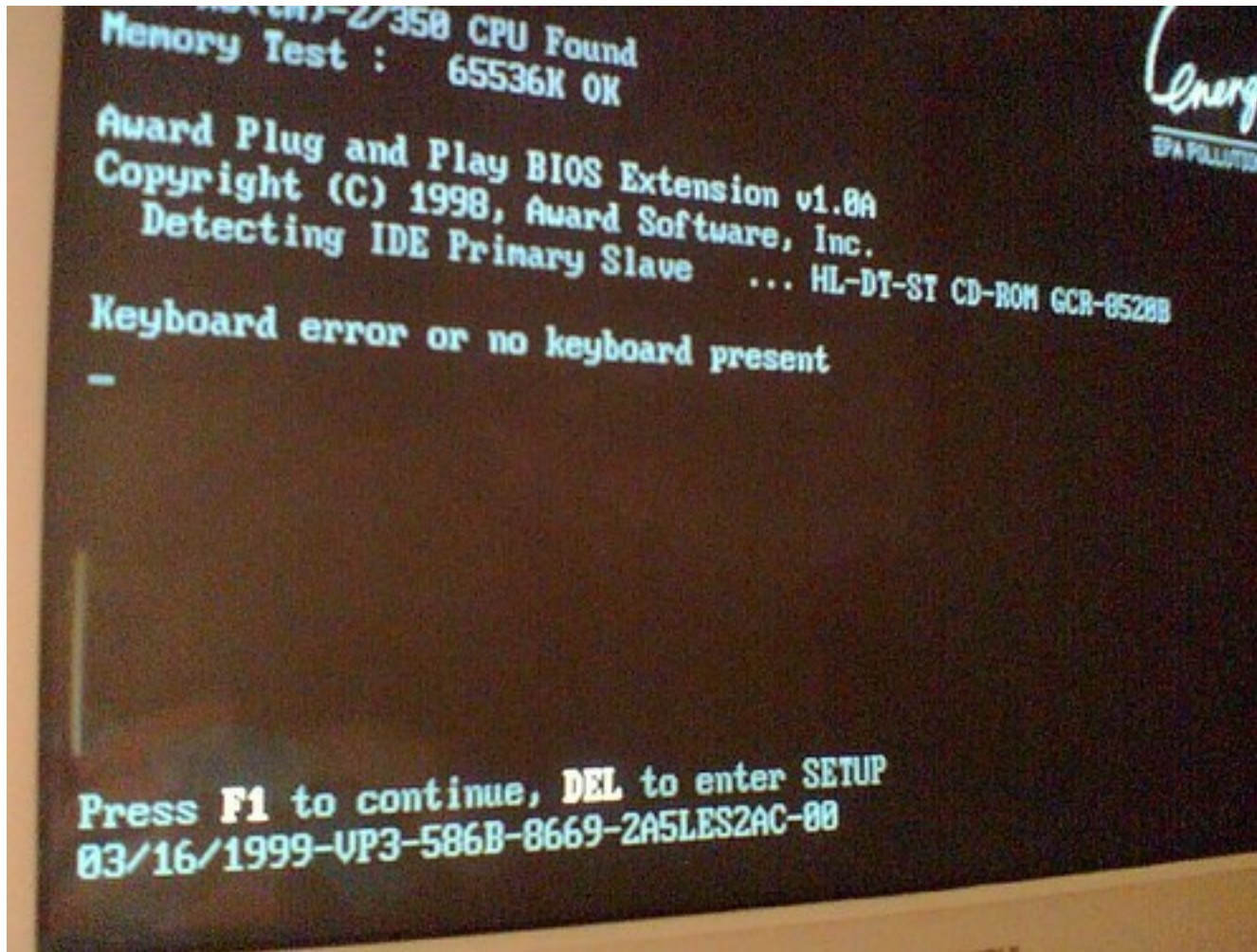
<http://flickr.com/photos/jemimus/87080221/>



```
static const u32 tg3FwText[(TG3_FW_TEXT_LEN / sizeof(u32)) + 1] = {
0x00000000, 0x10000003, 0x00000000, 0x0000000d, 0x0000000d, 0x3c1d0800,
0x37bd3ffc, 0x03a0f021, 0x3c100800, 0x26100000, 0x0e000018, 0x00000000,
0x0000000d, 0x3c1d0800, 0x37bd3ffc, 0x03a0f021, 0x3c100800, 0x26100034,
0x0e00021c, 0x00000000, 0x0000000d, 0x00000000, 0x00000000, 0x00000000,
0x27bdffe0, 0x3c1cc000, 0xafbf0018, 0xaf80680c, 0x0e00004c, 0x241b2105,
0x97850000, 0x97870002, 0x9782002c, 0x9783002e, 0x3c040800, 0x248409c0,
0xafa00014, 0x00021400, 0x00621825, 0x00052c00, 0xafa30010, 0x8f860010,
0x00e52825, 0x0e000060, 0x24070102, 0x3c02ac00, 0x34420100, 0x3c03ac01,
0x34630100, 0xaf820490, 0x3c02ffff, 0xaf820494, 0xaf830498, 0xaf82049c,
0x24020001, 0xaf825ce0, 0x0e00003f, 0xaf825d00, 0x0e000140, 0x00000000,
0x8fbf0018, 0x03e00008, 0x27bd0020, 0x2402ffff, 0xaf825404, 0x8f835400,
...
}
```

“binary blobs”

the Linux kernel: drivers/net/tg3.c



legacy BIOS

<http://flickr.com/photos/ivi/100203940/>



this proprietary low-level software
imposes restrictions

can provide a vehicle for DRM, the
ultimate anti-freedom technology



with DRM, free software is
impossible





What does the FSF want?

free software

+

hardware free from restrictions



The road to hardware free from restrictions: how hardware vendors can help the free software community

Justin Baugh
Ward Vandewege

February 2007

http://www.fsf.org/resources/hw/how_hardware_vendors_can_help.html





1. free software drivers
2. proprietary BIOS issues
3. “Microsoft tax”
4. Digital Restrictions Management



5. a free BIOS



3-pronged strategy





3-pronged strategy:
advocacy + awareness



campaign for a free BIOS

<http://www.fsf.org/campaigns/free-bios.html>

...

You can also help our campaign by writing to manufacturers such as Intel, saying they ought to cooperate with a fully free BIOS. Calm but strong disapproval, coupled with stating an intention to take action accordingly, is more effective than venting rage.

...





a response from Intel:



<http://flickr.com/photos/jenns-pics/104372137/>



Intel:

Writing BIOS code is not like writing an OS device driver. Chipset specifications can vary not just between chipset models, but between steppings of the same chipset. Problems in chipset hardware and problems in BIOS code are hard to distinguish without specific hardware instrumentation. End user BIOS replacement with a third-party BIOS (whether free or not) on a commercial motherboard is not allowed by nearly all hardware vendors because of the potential for BIOS viruses and the risk of rendering the hardware useless through ill-advised modifications. **For example, a laptop battery could explode if incorrect power management algorithms were applied.**



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FUD

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Intel:

BIOS is a part of the reliability and performance promise of the hardware. Chipset specifications at the level being discussed are commonly considered proprietary by all silicon vendors, not just Intel.





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FALSE

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Intel:

The open source firmware work that Intel **is** sponsoring could lead to a solution where proprietary low-level chipset initialization code from silicon vendors is made compatible with open source higher-level platform initialization and pre-boot management. If you are interested, we invite you to participate at www.tianocore.org.





Introducing the Intel Platform Innovation Framework for the Extensible Firmware Interface

<http://www.deviceforge.com/articles/AT8747644820.html>

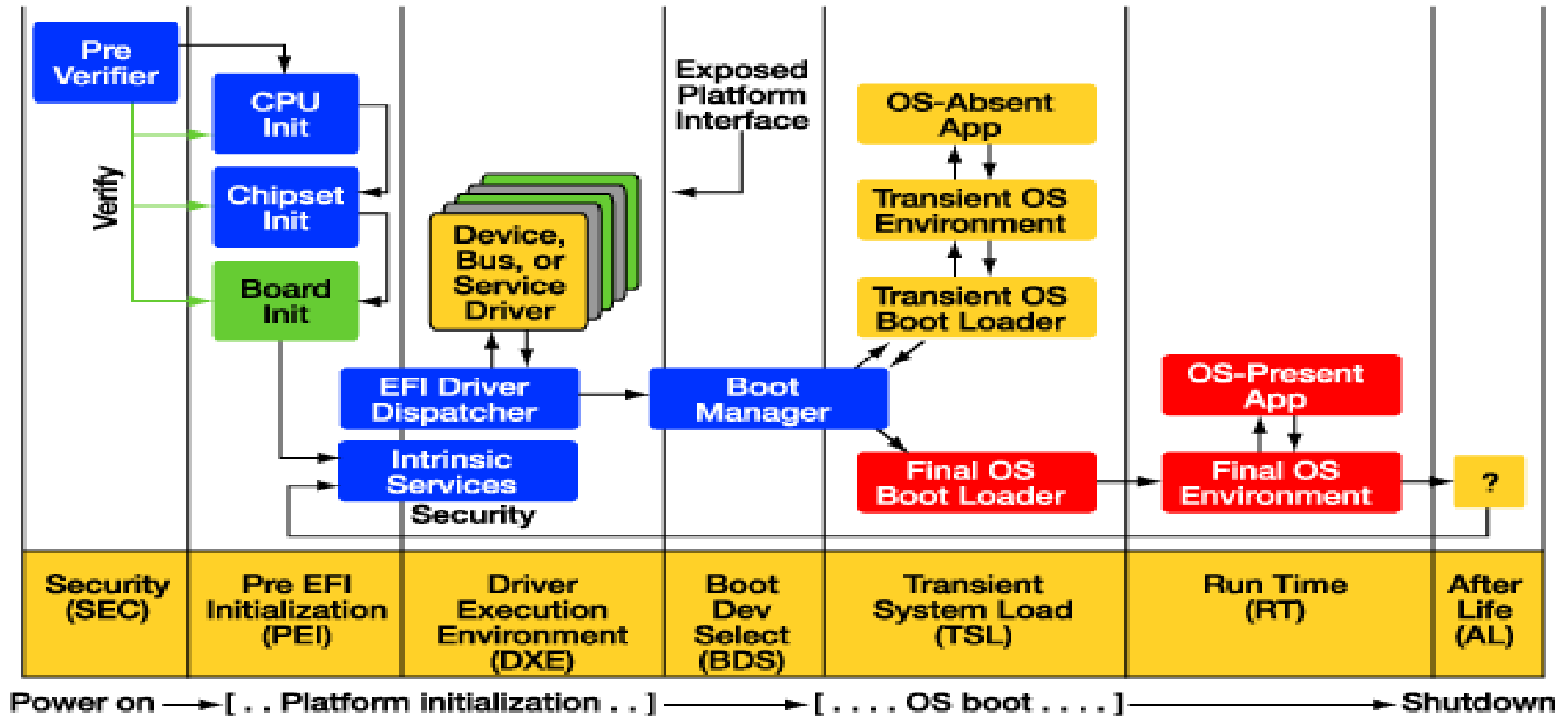


Figure 1. Firmware flow.

<http://www.deviceforge.com/articles/AT8747644820.html>



smoke and mirrors



3-pronged strategy:



<http://flickr.com/photos/jenns-pics/104372137/>



purchasing policy





upgrading to coreboot





- 10 machines running coreboot
- * servers with FILO
 - * servers with LAB
 - * diskless workstations with etherboot





Tyan s2881
Tyan s2882
Gigabyte m57sli-s4





6 potential conversions:

Tyan s2891

Tyan b3992

PC Engines alix.2c3





26 legacy machines





24% coreboot now





goal: 100%





3-pronged strategy:

vendors





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<http://flickr.com/photos/sargant/2087247190/>

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FSF endorsement

<http://flickr.com/photos/bip/21600807/>

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servers



<http://siliconmechanics.com>



nServ A236
supermicro H8DMR



servers



2008-04-03:

"We will commit to offering coreboot preinstallation on the A236 with a specific set of hardware and software. In the future, we may expand the program to additional platforms based on customer interest. We will include a message about coreboot support on the platform page in the next few days with instructions to contact sales for additional information."



desktop and laptop...





Dell
HP
Sun
MSI
Everex
...





Artec Group





design shop in Estonia
wants to build a “deluxe-olpc”





specs?





price point?





should the FSF sell
motherboards/machines
with coreboot preinstalled?

