



by Guido Socher ([homepage](#))

## Test: pre-installed Linux notebooks from LinuxCertified



*About the author:*

Guido hates it when computers are not predictable or do things that can not be explained and it is one of the reasons why he uses Linux. Under Linux strange things can happen too but with some perseverance you will normally find the cause.

*Abstract:*

Linuxcertified.com sells notebooks with Linux pre-installed. In this article we test two of their models. We will not run CPU benchmarks or other meaningless tests. We will instead present the features of each notebook and check how well the Linux integration on those machines was done.

---

## Introduction

The days when you could buy only notebooks with Windows are long over. If you look carefully around you will see many usually smaller companies which offer now Laptops without operating system or with Linux pre-installed.

One problem with notebooks is that you can not so easily exchange components. In order to save space most components are integrated into the chip-set. Since customers don't have a choice of different components you will generally not get a description of the components that are inside. It is therefore harder to know if sound chips, graphic controller, power management, Ethernet chip and modem are really fully supported by Linux or if something will not work as expected.

A company that does all the integration for you to make sure that all hardware components are fully supported is offering therefore a very valuable service.

Linuxcertified is a company in the USA and this time we test their notebooks to see how well they are working with Linux.

## The candidates

We bought two laptops from Linuxcertified.com one from their own brand called "LC2410" and one IBM Thinkpad 600e. When I called Linuxcertified my first question was "are all hardware components fully supported and working under Linux?". The answer was "yes" and I ordered.

## The LC2410



This model has a big screen and is there for also bigger in size. It is with 3.3Kg quite heavy but it is still a very usable notebook. Very good is the DVD/CD drive because it is as well a CD writer. It does not have a floppy drive and there is no RS232 serial port. Linuxcertified provides copies of the Linux installation CDs. That is: only the first 3 CDs from Redhat. Documentation CDs and source code CDs are not included.

### Details of our machine:

CPU: Intel Pentium 4 - 2.66 GHz  
RAM: 512MB standard DDR Ram  
Display: 15" XGA TFT LCD  
Chipset: Intel 845, see <http://www.intel.com/design/chipsets/845/>  
Video/Graphics: 82845G/GL, Integrated in chipset, XFree86 i810 driver.  
Accelerated 3d graphics are supported by XFree86 on this chipset.  
CD Drive: DVD/CD reader and CD writer (IDE interface)  
Networking: 10/100Mbit National Semiconductor DP83815 chip  
Modem: Intel 82801 (additional kernel modules are provided by Linuxcertified, driver is from <http://www.smlink.com/> )  
Sound: part of chipset, works with the i810\_audio driver.  
USB: 4 ports, USB 2.0 ehci controller, There is also a slot for SD, MS and MMC cards (not compact flash).  
PCMCIA: a single PCMCIA port  
Firewire: VIA IEEE 1394 OHCI  
other io ports: parallel port, PS2 port, S-Video Output Port,

15pin DB connector for external monitor  
OS: Redhat 9.0. Additional drivers (especially for the modem) are installed and also copied to /root/lc2000/  
Diskdrive: 40Gb IDE

Extras: free laptop bag

The LC2410 has no rs232 serial port and there is no floppy drive. You can plug in a usb floppy and the bios will be able to boot from it.

The laptop has a AMI bios as known from desktop machines. It offers plenty of configuration possibilities which is rare for most notebooks. On the right you can see the LC2410 open. You see the DDR Ram module, the harddisk, the CPU with cooling unit and the battery.



A big surprise was the power management. The BIOS has a ACPI power management interface which is not supported by the Redhat 9.0 distribution. It will however be supported in future (see <http://acpi.sourceforge.net/>). As of this writing the ACPI support in Linux is however still incomplete. The effect is that you don't information as to how much the battery is charged and the laptop does not power off when you shut it down. Suspend does however work independent of this. The LC2410 suspends when you press Fn+F1 and you can wake it up again by pressing the power-on button once.

The notebook gets rather warm when you use it for long hours. This is however not around the area where the CPU is but under and before the keyboard. It seems to come from the DVD-reader/CD-writer, chipset and the harddisk. The temperature sensor in the harddisk reports 60'Celsius (=140'F) when the LC2410 is used at room temperature (22'C=71'F) over several hours. I can not say if there is any further side effect of this. Until now the LC2410 is running without problems. You can at least cool down the disk a bit if you add "hdparm -S 12 /dev/hda" into /etc/rc.d/rc.local. This will park the disk if it is not used for more than 1 minute.

Otherwise all things except power management are working fine with the pre-installed Redhat 9.0. The notebook is with 2.66GHz und 512Mb ram a very fast computer. (Note: The card reader and the Firewire were not tested because we did not have any external devices/cards to test them).

## The IBM Thinkpad 600e

The Thinkpad 600e is a second hand machine ("refurbished"). IBM stopped its production in 1999. The machine was however in good shape. The display is 13" wide. The Thinkpad is a nice and handy machine. It is much smaller than the LC2410. Very good is also that IBM themselves have a Linux Thinkpad 600e webpage (see links at the end). On top of that you will find a lot of websites with information about Linux on Thinkpads ([www.linux-thinkpad.org](http://www.linux-thinkpad.org), linux thinkpad webring). The machine is of course a bit slower but everything is supported and working under Linux. A 400Mhz CPU is fast enough for almost all uses of a notebook. You can run a slim window manager such ICEWM to save on memory. This way you can totally avoid the use of swap space and still run one heavy application such as mozilla. The responsiveness and perceived speed of a computer running desktop applications depends not so much on the CPU speed but on the amount of swap that is used.



### Details of our machine:

```
Model: TP 600E 2645-4CU
CPU: Intel Pentium II/400 MHz
RAM: 288Mb
Display: 13.3" Active Color
Chipset: Intel 440BX
Video/Graphics: NeoMagic 256, XFree86 neomagic driver.
    Accelerated 3d graphics are not possible on this hardware.
CD Drive: CD reader (IDE)
Networking: 3com pcmcia card, 3c574
Modem: WinModem which is supported by the mwave driver.
Sound: Cirrus Logic. The standard soundblaster driver works
    actually OK (The CS4232 driver works also).
    You can put the following lines into /etc/modules.conf:
    options opl3 io=0x388
    options sb io=0x220 irq=7dma=1
USB: 1 usb port
other io ports: parallel port, PS2 port, 15pin DB connector
    for external monitor, rs232
OS: Redhat 8
Diskdrive: 10Gb IDE
```

An external floppy drive is included.

The Thinkpad has an infrared interface which was not tested.

The bios on the Thinkpad is almost nothing. You can hardly configure anything there. Instead IBM provided a utility called PS2 which can be used to set all kind of things (display blanking time, IRQs, ...). It is possible to fit this PS2 utility on a DOS boot disk (see uttcpdos at the end of this article). The changes done by PS2 are permanent. You can set them once and then just use the settings. There is

however a utility for Linux which offers equivalent functionality: [tpctl.sourceforge.net](http://tpctl.sourceforge.net)

The tpctl utility and the required kernel modules are not included with the laptop from Linuxcertified. A problem of this Thinkpad 600e is that the architecture is a bit old and IRQ sharing does not work between all the internal devices such as modem, sound chip, serial lines, usb controller, etc. It took me therefore a while to get all things to work at the same time. There was an IRQ conflict between the modem and the Ethernet card when the machine arrived.

## Conclusion

I would have expected that Linuxcertified integrates the hardware better with Linux. The specifications on their website did not mention at all that the power management functions do not work with their own brand names. It was therefore a bit of a surprise. The hardware is however of good quality and it might be that the standard Linux kernel will have sufficient support for the ACPI Bios of the LC2140 by the time you read this article.

Linuxcertified was generally very responsive in e-mail conversations. I would definitely recommend to buy Linux laptops from companies such as Linuxcertified. I would have had the chance to return the laptop and get the money back after discovering the problem with the power management which would never be an option if you buy without Linux pre-installed.

## Links

- [linuxcertified.com](http://linuxcertified.com), linux laptops
- Other vendors of pre-installed Linux notebooks:
  - [xtops.de](http://xtops.de)
  - [emperorlinux.com](http://emperorlinux.com)
  - [qlilinuxpc.com](http://qlilinuxpc.com)
  - [aslab.com](http://aslab.com)
- Sites about Linux on laptops:
  - [linux-laptop.net](http://linux-laptop.net)
  - [tuxmobil.org](http://tuxmobil.org)
  - [www.linux.org/hardware/laptop.html](http://www.linux.org/hardware/laptop.html)
- PS2 dos configuration utility:
  - <ftp://ftp.software.ibm.com/pc/pccbbs/mobiles/uttcpdos.exe>
  - <ftp://ftp.software.ibm.com/pc/pccbbs/mobiles/uttcpdos.txt>
- IBMs guide for installing Redhat 6.0 on an TP600:  
<http://www.pc.ibm.com/qtechinfo/MIGR-4BP6Q6.html>. Note that most of the limitations mentioned in this Redhat 6.0 document are not relevant for Redhat 8.0 or higher.
- Thinkpad 600e userguide
- [linux-thinkpad.org](http://linux-thinkpad.org), this site was not updated for a while but is still valid

- the tpctl utility, PS2 for Linux

---

|   |  |
|---|--|
| <p>Webpages maintained by the LinuxFocus Editor<br/>team<br/>© Guido Socher<br/>"some rights reserved" see <a href="http://linuxfocus.org/license/">linuxfocus.org/license/</a><br/><a href="http://www.LinuxFocus.org">http://www.LinuxFocus.org</a></p> | <p>Translation information:<br/>en --&gt; -- : Guido Socher (homepage)</p> |
|---|--|