

Toshiba Dynabook Portege X30L-J

Linux Mint 20.1 with Mate desktop

Technicians manual

v20210407

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1 Intention

The intention of this document is to create a manual for the standard computer user wanting to use Linux.

ONE machine - ONE operating system - ONE manual.

2 Version

See Engineers Manual.

3 Linux issue

The issue with Linux is that it is too configurable and when the standard user talks to Linux Nerds they get too much info and too many options. I think the standard home and business user wants a system which is holistically a machine and OS with a manual. Like [Puri.sm](#) or Apple I am trying to create a system where the machine and OS are one design.

Because:

- a) I am not as determined as [Puri.sm](#) or Apple to build from scratch and
- b) the only reason I'd NOT bought one of the [Puri.sm](#) machines is the warranty time difficulty between Australia and USA

I have taken the path of buying a 3rd party machine and trying to get as close to the unified system ideal as possible.

4 Why this machine?

- 4.1 I had a very reliable Toshiba before;
- 4.2 My old boss from 20 years ago still stands by and sells Toshiba;
- 4.3 Toshiba has a 3 year manufacturer warranty as standard;
- 4.4 Warranty covered Australia wide and most likely in most countries;
- 4.5 Backlit keyboard;
- 4.6 Metal chassis - Magnesium Alloy for durability;
- 4.7 Hi res screen;
- 4.8 Hopefully reasonable graphics card;
- 4.9 RJ-45 connector;
- 4.10 Reasonable ports - USB, Thunderbolt, STANDARD HDMI, MicroSD card reader, earphone.
- 4.11 Toshiba appear to build to industry standards and not make up some propriety new mangled standard like Apple, Acer or IBM. --- You here me out there manufacturers!!! If manufacturers make proprietary rubbish with no manuals and parts that are designed to fail so I have to come back to you to buy them, I will do everything in my power to buy somewhere else and tell everyone else to buy something else!!
- 4.12 Highly likely to be Linux compatible.

5 Improvement suggestions

- 5.1 Build in the PSU. 90% of laptop users cart their PSU around with them. Thus all the wires hanging off the PSU WILL break and it adds to the weight anyway. Reduce the weight by building the PSU into the chassis as a separate replaceable unit. NO extra wire from the PSU to the Laptop.
- 5.2 Make a magnetic IEC adaptor. For the PSU. Apple did the magnetic connector years ago. They did a horrible job of it, but it's still better than the rest of the manufacturers. IEC plugs are everywhere. Make a separate PSU which connects magnetically to the chassis, but streamlined into the chassis. If someone trips over the cable it will still come off. It sits smooth with the chassis so fits into a laptop sleeve.
- 5.3 IEC connectors to the PSU. They are everywhere so there is no need to carry any extra cables in transit.
- 5.4 12 volts through the IEC connector. Auto sensing switch mode PSUs have been around for ages. Add 12v to the 120v and 240v auto sensing.
- 5.5 Mechanical replaceable switches on the camera, microphone, wifi & GPS.
- 5.6 A non back lit monochrome LCD screen like an e-reader except as a laptop. Colour would be nice, but I've not checked the colour e-readers as yet. The eye strain on a non back lit screen I find to be substantially less. It would also make a mammoth power saving.
- 5.7 Waterproof keyboard?? It's 2021 people. One of the most common ways a notebook PC is damaged it through liquids. Where is the waterproof keyboard or I should as whole machine?
- 5.8 Single click on a filename to go into edit filename mode instead of right clicking and selecting 'Rename'.
- 5.9 When double clicking on the column divider in Caja, the column expands or contracts to the width of the max length file name like IOS or windows XP.
- 5.10 Drag a file with the right mouse button held and where it drops another menu comes up with the options:
 - 5.10.1 Create link here
 - 5.10.2 Copy
 - 5.10.3 Move
 - 5.10.4 Extract here.
- 5.11 Pinch zoom working as standard
- 5.12 Touch pad two finger rotate as standard.

6 Description

This document outlines the setup of a Toshiba Dynabook Portege X3.0L-J notebook computer running Linux Mint version 20.1.

7 The machine

Taken from:

Menu → System Reports → System Information.

System: Kernel: 5.8.0-48-generic x86_64 bits: 64 compiler: N/A Desktop:
MATE 1.24.0 wm: marco

dm: LightDM Distro: Linux Mint 20.1 Ulyssa base: Ubuntu 20.04 focal

Machine: Type: Laptop

System: Dynabook

product: PORTEGE X30L-J v: PCR10A-02P003 serial: <filter>

Chassis: type: 10 v: Version 1.0 serial: <filter>

Mobo: Dynabook model: A010D/0001 v:
Version A0 serial: <filter> UEFI: Dynabook
v: Version 1.90 date: 02/04/2021

Battery: ID-1: BAT1 charge: 37.7 Wh condition: 54.1/53.1 Wh (102%)
volts: 15.7/15.4

model: G71C000M8221 serial: <filter> status: Discharging

CPU: Topology: Quad Core model: 11th Gen Intel Core i5-1135G7 bits: 64
type: MT MCP

arch: Tiger Lake rev: 1 L2 cache: 8192 KiB

flags: avx avx2 lm nx pae sse sse2 sse3 sse4_1 sse4_2 ssse3 vmx
bogomips: 38707

Speed: 851 MHz min/max: 400/4200 MHz

Core speeds (MHz): 1: 608 2: 969 3: 3480 4: 1269

5: 1080 6: 666 7: 3437 8: 1064

Graphics: Device-1: Intel driver: i915 v: kernel bus ID: 00:02.0 chip ID:
8086:9a49

Display: x11 server: X.Org 1.20.9

driver: modesetting unloaded: fbdev,vesa

compositor: compiz resolution: 1920x1080~60Hz

OpenGL: renderer: Mesa Intel Xe Graphics (TGL GT2) v: 4.6 Mesa

20.2.6

direct render: Yes

Audio: Device-1: Intel driver: snd_hda_intel

v: kernel bus ID: 00:1f.3 chip ID: 8086:a0c8

Sound Server: ALSA v: k5.8.0-48-generic

Network: Device-1: Intel

driver: iwlwifi v: kernel

port: 3000 bus ID: 00:14.3 chip ID: 8086:a0f0

IF: wlo1 state: up mac: <filter>

Device-2: Intel Ethernet I219-V

driver: e1000e v: 3.2.6-k port: efa0 bus ID: 00:1f.6

chip ID: 8086:15fc
IF: eno2 state: down mac: <filter>

Drives: Local Storage: total: 931.51 GiB used: 492.28 GiB (52.8%)
ID-1: /dev/nvme0n1
vendor: Crucial model: CT1000P1SSD8 size: 931.51 GiB
speed: 31.6 Gb/s lanes: 4 serial: <filter>
Partition: ID-1: /
size: 915.40 GiB used: 492.27 GiB (53.8%) fs: ext4 dev:
/dev/nvme0n1p2

USB: Hub: 1-0:1 info: Full speed (or root)
Hub ports: 1 rev: 2.0
chip ID: 1d6b:0002
Hub: 2-0:1 info: Full speed (or root)
Hub ports: 4 rev: 3.1 chip ID: 1d6b:0003
Hub: 3-0:1 info: Full speed (or root)
Hub ports: 12 rev: 2.0 chip ID: 1d6b:0002

Device-1: 3-5:2 info: Siliconworks SiW HID Touch Controller type: HID
driver: hid-generic,hid-multitouch,usbhid rev: 2.0 chip ID:
5348:1201

Device-2: 3-6:3 info: Chicony Web Camera - HD type:
Video driver: uvcvideo rev: 2.0
chip ID: 04f2:b6f0

Device-3: 3-10:4 info: Intel type: Bluetooth driver: btusb rev: 2.0 chip ID:
8087:0026
Hub: 4-0:1 info: Full speed (or root)
Hub ports: 4 rev: 3.1 chip ID: 1d6b:0003

Sensors: System Temperatures: cpu: 53.0 C mobo: 53.0 C
Fan Speeds (RPM): N/A

8 Install

Once you've acquired your X30 you'll need to download the image file from linuxmint.com. From here you will create a boot thumb drive from that .iso image using [the installation guide](#).

Stick the thumb drive in the USB port and turn on the computer. Keep pressing F2 to get into the BIOS.

In the BIOS you can choose the boot order. Select to boot from the thumb drive via USB. The machine should now boot into the Linux Mint OS running from the thumb drive. It will have an option there to install the OS. Choose it and select the default options.

9 Installing the correct Kernel

See Fixing the suspend issue - Part I.

10 LAN driver

e1000e-3.8.4.tar.gz

Available from either:

<https://dionpatelis.com/mint-20-1-desktop-on-x30l-j/>

or

<https://downloadcenter.intel.com/download/15817>

Instructions from intel:

<https://www.intel.com/content/www/us/en/support/articles/000005480/network-and-i-o/ethernet-products.html>

Summarised into:

Prerequisites

```
apt-get install linux-headers-$(uname -r)
apt-get install gcc make
```

You may need to perform a general update and restart before the next steps.

Download current e1000e package from Download Center. Move the base driver tar file to the directory of your choice.

For example, use

```
/home/<USERNAME>/e1000e or /usr/local/src/e1000e.
```

Untar/unzip the archive, where <x.x.x> is the version number for the driver tar file:

```
tar xzf e1000e-<x.x.x>.tar.gz
```

Change to the driver src directory, where <x.x.x> is the version number for the driver tar:

```
cd e1000e-<x.x.x>/src/
```

Compile the driver module:

```
make install
```

The binary installs as:

```
/lib/modules/<KERNEL
VERSION>/kernel/drivers/net/e1000e/e1000e.ko
```

The install location listed above is the default. Location may differ for various Linux distributions.

Load the module using either the insmod or modprobe command:

```
modprobe e1000e insmod e1000e
```

Note: You can use the insmod command for 2.6 kernels if you specify the full path to the driver module. For example:

```
insmod /lib/modules/<KERNEL
VERSION>/kernel/drivers/net/e1000e/e1000e.ko
```

With 2.6 based kernels, make sure that older e1000e drivers are removed from the kernel before you load the new module:

```
rmmmod e1000e; modprobe e1000e
```

Assign an IP address to the interface by entering the following, where <x> is the interface number:

```
ifconfig eth<x> <IP_address>
```

Verify that the interface works. Enter the following, where <IP_address> is the IP address for another machine on the same subnet as the interface you're testing:

```
ping <IP_address>
```

11 Audio driver

Quoted from forum thread:

“As I said the sound driver I was running was sof-audio-pci, which had no normal firmware at the moment.

I searched nearly 3 hours trying to solve this headache and finally found the solution, just disable this "sof" driver and fall back to intel:

Do:

```
sudo gedit /etc/default/grub
```

Change

```
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash"
```

to:

```
GRUB_CMDLINE_LINUX_DEFAULT="quiet splash  
snd_hda_intel.dmic_detect=0"
```

Then do:

```
sudo update-grub
```

and Reboot.

You can check if soundcards are detected with:

```
aplay -l
```

Thread reference:

<https://askubuntu.com/questions/1243369/sound-card-not-detected-ubuntu-20-04-sof-audio-pci>

12 Fixing the suspend issue - Part I

Out of the box when you try click suspend the screen will go black and then it will come back to life. To fix this load the correct kernel as usually it's a graphics driver issue.

To check if you have a graphics driver loaded:

```
inxi -Fxxxrz
```

It will throw back:

```
Graphics:  
Device-1: Intel driver: N/A bus ID: 00:02.0 chip ID:  
8086:9a49  
Display: x11 server: X.Org 1.20.9 driver: fbdev unloaded:  
modesetting,vesa compositor: compiz v: 0.9.14.1 resolution:  
1920x1080~77Hz  
OpenGL: renderer: llvmpipe (LLVM 11.0.0 256 bits) v: 4.5  
Mesa 20.2.6  
compat-v: 3.1 direct render: Yes
```

showing that the graphics driver is not loaded.

User SMG on the Mint forums said:

“Given how new your processor is, I would first recommend switching to the 5.8 kernel which is available in Update Manager.

Open Update Manager. Select View > Linux Kernels and click Continue. Make

sure 5.8 is selected on the left panel and then click the top-most option on the right panel. An "Install" button will appear. Install the kernel and then reboot for it to become active.

Let's see if that loads the i915 driver, modesetting, and the Intel renderer."

I did so and now it works. The screen turns off:

```
Graphics:
Device-1: Intel driver: i915 v: kernel bus ID: 00:02.0 chip
ID: 8086:9a49
Display: x11 server: X.Org 1.20.9 driver: modesetting
unloaded: fbdev,vesa compositor: compiz v: 0.9.14.1
resolution: 1920x1080~60Hz
OpenGL: renderer: Mesa Intel Xe Graphics (TGL GT2) v: 4.6
Mesa 20.2.6 direct render: Yes
```

Forum reference:

<https://forums.linuxmint.com/viewtopic.php?f=47&t=346619>

13 Suspend issue - part II

Laptop wont stay in suspend.

For a list of devices that wakeup the computer:

```
cat /proc/acpi/wakeup
```

The 4 letter codes are specific to manufacturer so are a bit hard to figure out.

You can grep in

```
cat /proc/bus/input/devices
```

for the codes shown in

```
cat /proc/acpi/wakeup
```

For the Portege I found that if I disabled:

```
RP08
```

it appears to put the system to sleep except the screen is like in a black on state with a non blinking cursor. This concerns me as it would still be using power.

To disable

```
echo RP08 | tee /proc/acpi/wakeup
```

Forum reference:

<https://forums.linuxmint.com/viewtopic.php?f=90&t=261465&start=20>

14 Compiz - the ultimate window manager

By far the smoothest window manager I've ever used. It looks like it's there out of the box with Linux Mint, but it just never works.

(If the Linux Mint team are reading this, could you please make a big fat button in the 'Control Centre' to set the following up automatically? Other than that, you guys have made an awesome OS, thank you and keep up the fantastic work.)

Mac OSX took some Compiz components and added them to make a very slick OS (Up to OSX 10.6.9)

14.1 Wobbly windows

I love wobbly windows as it makes the desktop feel organic. Also because my eyesight is diminishing due to age, the Zoom in 'Enhanced Zoom Desktop' is great. I've set to <alt>Button4 and <alt> Button5 which is <alt> scroll to zoom in and out smoothly.

14.2 Desktop switcher cube

The 'Enable Rotate Cube' Compiz setting I've set to <ctrl><alt> left and right arrows makes desktop switching impressive and easy for the brain to handle.

14.3 Setup

Linux Mint Mate 19.3 & 20.1

It needs to be setup in Mint Mate

Go to a terminal session for the current user.

```
compiz --replace
```

then you can configure everything else from the 'Control Centre' menu item.

To make it start automatically for that user:

Menu → type 'startup applications'

Add the

```
compiz --replace
```

command

Logout and in again.

Voila!

15 Keyboard

It's keystrokes are not as smooth as a lot of other keyboards I've tried, but I can see how maybe some would prefer it.

Size is nice and having 'page up' & 'page down' is excellent.

Water proof or splash resistant ???

16 Screen

The screen seems a little flexi for my liking initially. However it may be fine. To get a laptop under 1kg is quite a feat. As much as I liked the durability of a toughened glass screen by Apple, it's glossy reflection drove me mad on many an occasion, thus a matte screen is far nicer to work on. After 10 years the glass screen on the MacBook still looks new. We'll see how the X30 screen stands up to the test of time. The Toshiba did come with a soft cloth to keep between the screen and the keyboard though. And in Toshiba's defence, the first Tecra A40 I had between ~2005 and 2010 I did not put anything between the screen and the keyboard when closed and in transit it did scratch the screen, and thus the MacBook Pro always had a piece of foam between screen and keyboard in transit without fail.

17 Disabling the IME

Disabling the Intel Management Engine. Refer to blogs at [Puri.sm](https://puri.sm)

18 ToDos

Setup inertia scrolling on the trackpad like OSX. So you can flick and it keeps scrolling.

- 18.1 Check microphone.
- 18.2 Get all the function keys working as Toshiba has designed.
- 18.3 Get double click on the top of any given window to maximise working every time, not just sometimes.
- 18.4 Get virtual machines running.

19 Glossary

~ (tilde)	=	Approximately equal to
OS	=	Operating System
LAN	=	Local Area Network

20 Forks

Feel free to fork these manuals. They are GNU licence.

21 Contribute

If this manual has helped you and you feel you want to contribute, That or motivate me to update this manual and write other ones. Please do so at <https://www.patreon.com/dionpatelis>