# Workshop 02 - Operating System Install

SLQ Wiki Fabrication Lab 2025/07/06 11:09

# Workshop 02 - Operating System Install

Today we'll:

- Ensure your computer powers on
- Troubleshoot errors from Power On Self Test (POST)
- Boot to Basic Input Output System (BIOS), and
- Begin installing our Operating System (OS).

# Power On

- Ensure your case is closed/fits tightly
- Connect your keyboard and mouse
- Set-up your monitor, connect the VGA cable
- Connect power cables into the monitor and case last
- Try the power button!

If correctly assembled you'll see:

- Green power and hard drive LEDs flash
- Then power LED stays on and
- Fans start up (quietly)
- BIOS screen flashes

#### Success!

Congratulations! Please assist others.

### Failure?

- Is it fully plugged in?
- Does the power switch click? (Try removing the front panel and press it directly.)
- Check power switch connection to the motherboard. (**Unplug the power lead**, open case and check the front panel power header is connected.)
- Check power cables from the PSU to the motherboard. (plugs only fit in one direction, so don't force them.)

# POST

The Power On Self Test (POST) checks your computer when it turns on. It is quick and only stops on errors.

If your computer turns on but doesn't pass POST, it tells you with lights and beeps.

Most errors are easily fixed.

#### **Two Beeps**

BEEPS	Power LED	Probable Cause
2 beeps	Blinks red 2 times @ 1 Hz	Processor thermal shut down. Check air flow, fan operation, and CPU heatsink

• Is the fan cable plugged in and air guide installed correctly? Are heatsink screws tight?

#### **Three Beeps**

3 beeps	Blinks red 3 times @ 1 Hz	Processor not installed. Install or reseat CPU.

• Is your processor is sitting in the socket firmly? Are heatsink screws firmly tightened?

#### **Four Beeps**

4	Blinks red 4 times	Power failure (power supply is overloaded). Check storage devices, expansion cards and/or
beeps	@ 1 Hz	system board (CPU power connector P3).

• Is the CPU power connector connected?

#### **Five Beeps**

5 beeps	Blinks red 5 times @ 1 Hz	Pre-video memory error. Incompatible or incorrectly seated RAM.
---------	---------------------------	---

• Is your RAM firmly clicked into place? Test RAM individually.

#### Six/Seven/Eight Beeps

6 beeps	Blinks red 6 times @ 1 Hz	Pre-video graphics error. On system with integrated graphics, check/replace system board. On system with graphics card, check/replace graphics card.
7 beeps	Blinks red 7 times @ 1 Hz	PCA failure. Check/replace system board.
8 beeps	Blinks red 8 times @ 1 Hz	Invalid ROM (checksum error). Reflash ROM using CD or replace system board.

• Please ask for assistance (advanced).

#### **Nine Beeps**

|--|

Check your PSU cable headers on the motherboard.

#### Ten Beeps

10 beeps	Blinks red 10 times @ 1 Hz	Bad option card
----------	----------------------------	-----------------

• Won't occur unless a PCI expansion card is installed. If installed, remove and reboot.

# **Customising BIOS**

After POST your computer will continue to boot by activating the Basic Input Output System (BIOS).

- The BIOS is firmware, and works between your computer's hardware and software.
- It's permanently attached to the hardware.
- A battery retains settings for up to 10 years.

BIOS will attempt to boot your computer and run checks. As your computer was recently disassembled, it may request information.

It may ask to confirm hardware changes:

SLC	) Wiki	5/33	Workshop	02 - Operating	System li
	4096 MB				
	Initializing PXE 2.1 Buil	Intel(R) Boot Agent GE v1. d 088 (WfM 2.0)	3.40		
	The follo Disk: 16	wing configuration options 0 GB ST3160318	were automatically up MAS	dated:	
	If yo using	u are running Unix, you nee the Computer Setup Utility	d to configure your s (F10).	system	
	F1: Save C	hanges	<f9=boot menu=""> <f10:< td=""><td>-Setup&gt; <f12= < td=""><td>Network&gt;</td></f12= <></td></f10:<></f9=boot>	-Setup> <f12= < td=""><td>Network&gt;</td></f12= <>	Network>

to set the date and time:



and launch operating system from the internal hard drive.

**Line Edge** 2025/07/06 11:09

7/33



Your hard drive was wiped, so it cannot continue to boot.

#### **System Configuration**

Access 'System Configuration' so your computer can boot from USB to install our operating system. A well-timed keystroke is required. See keys on the 'splash' screen (bottom right):

8/33



• F9: Choose a device to boot from.



• F12: Force computer to boot from network card (advanced).

**The Edge** 2025/07/06 11:09



• F10: BIOS set-up. On your next reboot, press and hold F10.

**Line Edge** 2025/07/06 11:09



**BIOS Set up** 

Select language:



Select 'System Information' from 'File' menu.





This displays information about the computer's components.

Hewlett-Packard Setup Utility				
File Storage Security	Power Advanced			
	- System Information			
Product Name SKU Number	HP Compaq 8100 Elite SFF PC AY032AU			
Processor Type Processor Speed	Intel(R) Core(TM) i5 CPU 650 @ 3.20GHz 3.200 GHz			
Cache Size (L1/L2/L3)	64KBx2 / 256KBx2 / 4096KBx1			
Channel A Channel B	XMM1 2048 MB / XMM2 0 MB XMM3 2048 MB / XMM4 0 MB			
Integrated NAC System BIOS Chaosia Serial Number	6C626D027401 786H1 v01.02			
Asset Tracking Number	AUD02209B3			
Management Mode	ANT			
	Press any key to continue			
DCAL: <f1=help> REMOTE: F</f1=help>	1=ESC+1, F5=ESC+5, F10=ESC+0			

See Processor information from Workshop 01? See hardware without opening the case. Exit with any key.

He	wlett-Packard Setup Utility
File Storage Security	Power Advanced
	- System Information
Product Name SKU Number Processor Type Processor Speed Processor Stepping Cache Size (L1/L2/L3) Memory Size Channel A Channel B Integrated MAC System BIOS Chassis Serial Number Asset Tracking Number ME Firnware Version Management Mode	HP Compaq 8100 Elite SFF PC AY032AU Intel(R) Core(TM) i5 CPU 650 @ 3.20GHz 3.200 GHz 00020652 00000009 64KBx2 / 256KBx2 / 4096KBx1 4096 MB DDR3/1333 MHz/Dual Channel XMM1 2048 MB / XMM2 0 MB XMM3 2048 MB / XMM4 0 MB 6C626D027401 786H1 v01.02 AUD02209B3 AUD02209B3 6.0.3.1195 AMT
	Press any key to continue
	Tross and nog to concritate
.OCAL: <f1=help> REMOTE: F</f1=help>	1=ESC+1, F5=ESC+5, F10=ESC+0
	a nana na tana aga na tana aga na tana na

Set Time/Date



ile Storage Secu	Hewlett-Packard Setup Utility ritu Power Advanced
System Information	
et Time and Date Tash System ROM eplicated Setup	Set Time and Date Time (hh:mm) ▶12:01 Date (mm/dd/yyyy) 01/21/2016
efault Setup	F10=Accept, ESC=Cancel
apply Defaults and gnore Changes and Save Changes and Ex	Exit Exit Kit
OL + ZE1-U-LaN DEMO	TE: E1_E2C.1 EE_E2C.E E10_E2C.0

Select 'Storage', then 'Device Configuration'.

Recognise your hard disk and DVD drive?



Exit and select 'Storage Options'. Enable 'Removable Media Boot' to allow booting from USB.

SLQ Wiki	18/33	Workshop 02 - Operating System Instal
SLQ Wiki	18/33 Storage Secu Device Config Storage Optic DPS Self-tes Boot Order	Workshop 02 - Operating System Instal         Heulett-Packard Setup Utility         rity Power Advanced         uration         Storage Options         Removable Media Boot Penable         Max eSATA Speed       1.5 Gbps         SATA Emulation       IDE         F10=Accept, ESC=Cancel
LOCAL :	<f1=help> REM</f1=help>	MTE: F1=ESC+1, F5=ESC+5, F10=ESC+0

Exit and select 'Boot Order' to see available options.





Boot Order

-F5=Disable, Enter=Drag, F10=Accept, ESC=Cancel

▶ ATAPI CD-ROM Drive

Integrated SATA Network Controller

USB device Hard Drive

We'll boot from USB, so move USB to the top.

LOCAL: <F1=Help> REMOTE: F1=ESC+1, F5=ESC+5, F10=ESC+0

DPS Sel

Boot Or

**Line Edge** 2025/07/06 11:09



Disable network booting if unneeded.

**Line Edge** 2025/07/06 11:09





Confirm with F10 and exit Boot Order.

Return to 'File' menu. Select 'Save Changes and Exit'.

He	wlett-Packard Setup Utility
File Storage Security	Power Advanced
System Information About	
Set Time and Date Flash System ROM	- Save Changes and Exit
Replicated Setup	Save Changes and Exit?
Default Setup	F10=Yes, ESC=No
Apply Defaults and E	
Save Changes and Exit	
LOCAL APT HILL N DEMOTE	1 POC. 4 TE POC. E . B40 POC. 0
WCHT: (LI=Helb> REUNLE: F	1=E3C+1, F5=E3C+5, F10=E3C+0

Confirm with F10. Your computer and boot process will restart, looking for the USB.

# **Boot From USB**

You'll be given a USB containing a Xubuntu Live System and Installer. (A Live System lets you boot/use your computer from USB). We'll use this to install the Operating System (OS).

Insert USB and restart the computer (ctrl-alt-delete).



If successful, it should show a desktop environment with the Install Dialogue open.



If not, check your BIOS settings and ask for assistance.

# **Install Xubuntu**

Choose English, then 'Install Xubuntu'.

Welcome		
Bosanski Català Čeština Cymraeg Dansk Deutsch Eesti English		
Español Esperanto	Try Xubuntu Install Xubuntu	
Français Gaeilge Galego Hrvatski	You can try Xubuntu without making any changes to your computer, directly from this CD. Or if you're ready, you can install Xubuntu alongside (or instead of) your current operating system. This shouldn't take too long.	
Íslenska	You may wish to read the <u>release notes</u> .	

#### **Keyboard Layout**

Choose the correct keyboard layout. (Use 'Detect Keyboard Layout' if unsure.)

#### Wireless

Choose whether to connect to wireless. We'll select 'I don't want to connect to a wifi network right now' for now.

#### **Third Party Software**

Select 'Install third-party software' (this lets us use propetary software types, such as MP3s.)

-	e onwe space	
🧹 is connected to the Intern	ĸ	
Download updates while instal	ing	
buntu uses third-party software	to play Flash, MP3 and other media, ar	nd to work with some graphics and wi-fi hardware. Some of this
oftware is proprietary. The softwa	re is subject to license terms included v	with its documentation.
Install this third-party software Ruendo MP3 plugin includes MPEG	Laver-3 audio decoding technology licensed f	from Fraunhofer IIS and Technicolor SA.
	-, -, -, -,	
		🕲Quit 🗲 Back Contin

#### Installation Type

Select your hard disk, chose 'Erase and install', then 'Install now'.

• Install	×
Installation type	
This computer currently has no detected operating systems. What would you like to do?	
<ul> <li>Erase disk and install Xubuntu Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.</li> </ul>	
Encrypt the new Xubuntu installation for security You will choose a security key in the next step.	
Use LVM with the new Xubuntu installation This will set up Logical Volume Management. It allows taking snapshots and easier partition resizing.	
<ul> <li>Something else</li> <li>You can create or resize partitions yourself, or choose multiple partitions for Xubuntu.</li> </ul>	
Oquit	Heack Install Now

#### Where are You?

Set your computer location (Brisbane), then continue.



#### **Your Details**

Provide your details and create a **memorable** password. Select 'log in automatically', then continue.

Your system will now install.

ccc-opal	∢
The name it uses when it talks to other computers.	
Short password	
Log in automatically	
<ul> <li>Require my password to log in</li> <li>Encrypt my home folder</li> </ul>	
	Continue
• • • • • • •	
	<ul> <li>ccc-opal</li> <li>cccopal-VirtualBox</li> <li>The name it uses when it talks to other computers.</li> <li>ccc-opa</li> <li>Short password</li> <li>tog in automatically</li> <li>Require my password to log in</li> <li>Encrypt my home folder</li> </ul>

#### **Complete Installation**

When complete, remove your USB and restart. Enter BIOS again and change your first boot device to internal hard disk.



#### **SDLW Network Setup**

Let's quickly set up our local SDLW network. We'll use it to update/install software without internet.

The facilitator laptop acts as a server to store your needed files. Your facilitator will show you this.

# **Break Time**

# The Operating System

An Operating System (OS) looks after:

- Booting
- Controlling peripherals
- Providing a graphical user interface (GUI) and desktop environment
- Managing system resources like the Central Process Unit (CPU) and the (GPU).
- Interacting with/storing files
- Communicating over networks

We just installed Xubuntu - a 'flavour' of Ubuntu based on Linux, a Free and Open Source OS.

# **Navigating Xubuntu**

Launch Xubuntu.

In the top left you can access the whisker menu, (like Windows start menu).

Here you can access pre-installed programs and desktop settings.

# **The File Manager**

The File Manager helps us navigate your system's files and folders. Select it from the whisker menu.

CCC - File Manager				
File Edit View Go Help				
🗲 🔶 🛧 🏦 🏠 /hor	ne/ccc/			Ċ
DEVICES	Name	Size Type	Date Modified	A 1
File System	E Desktop			
PLACES	Downloads	4.1 kB folde	r Friday	
🟠 ccc	Documents	4.1 kB folde	r Thursday	
E Desktop	VirtualBox VMs	4.1 kB folde	r Thursday	
🔋 Rubbish Bin	recover recover	4.1 kB folde	r Thursday	
CCC-OPAL-MEDIA	dcfldd-1.3.4-1	4.1 kB folde	r 14/04/15	
NETWORK	liferay-6.2-6	4.1 kB folde	r 10/04/15	
Srowse Network	Pictures	4.1 kB folde	r 08/04/15	
	CCC dokuwiki varations	4.1 kB folde	r 07/04/15	
	Scratch	4.1 kB folde	r 11/03/15	
	aseprite	4.1 kB folde	r 11/03/15	
	apks	4.1 kB folde	r 10/03/15	
	iemp	4.1 kB folde	r 06/03/15	
		A 4 LD folds	06/00/45	v

It will default to your home folder. Note your file location within the computer in the top bar.



**Edge** 2025/07/06 11:09

# **Customising your Desktop**

You can customise your desktop - eg, by right clicking image files (Connect your phone to drag one over) to 'set as desktop background'. You can also change theme. In the whisker menu, select 'settings' and select 'window manager'.



Select 'kokodi' - it has larger window handles for easier resizing.

۲.	Window Manager 🛛 🗢 🗙
Configure window behaviour	r and shortcuts
Style Keyboard Focus Advanced	
Theme	Title font
Default	Droid Sans Bold 9
Albatross Bluebird	Title alignment
Daloa Greybird	Centre ‡
Greybird-compact	Button layout
Kokodi 📐	Click and drag the buttons to change the layout
Moheli Numix Orion	Active Title X Hidden •
(?) Help	X Close

# Updates

Choose 'Settings' from the whisker menu and select 'Software Updater'.



It will check for updates from the SDLW laptop.

Software Updater	- ×
Checking for updates	
	Stop
Finished	
<u>^</u>	

Don't worry if some updates are missing - click 'install now'.

SLQ Wiki	32/33	Workshop 02 - Operatir	ig System Install
8	S	oftware Updater	_ ×
	Updated soft computer. D The computer al previous update	tware is available for this o you want to install it now? so needs to restart to finish installing s.	
+ Detai	ils of updates		
6	1.5 MB will be down	loaded.	
Se	ettings	Remind Me Later Install Not	N

Enter your password - your system will update.

Software Updater	- ¤ ×
Installing updates	
	Cancel
Preparing installation of linux-image-extra-3.13.0-51-generic	
▼ Details	
Selecting previously unselected package linux-image-3.13. (Reading database 282025 files and directories current Preparing to unpack/linux-image-3.13.0-51-generic_3.12 Desc	0-51-generic. tly installed.) 3.0-51.84_amd64.deb
Unpacking linux-image-3.13.0-51-generic (3.13.0-51.84) Selecting previously unselected package linux-image-extra Preparing to unpack/linux-image-extra-3.13.0-51-gener	-3.13.0-51-generic. ic_3.13.0-51.84_amd64.
φD Unpacking linux-image-extra-3.13.0-51-generic (3.13.0-51.3	84)

Restart your computer before the next workshop.



Workshop 03 - Productivity and System Tools