Ubuntu Linux Setup Guide

For Lenovo ThinkPad P15, P17, P1 Gen 3 *** Official support of Ubuntu 20.04 LTS and later.





Section 1 – BIOS Setup and Pre-Installation Steps

The first step before installing Linux is to make sure the system BIOS is setup correctly.

• Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.



• Tab over to the "Config" menu tab

ThinkPad	Config		
Setup	→ Network → USB → Keyboard/Mouse		
Main ☆ Config	 → Display → Power → Beep and Alarm 		
Date/TimeSecurity	→ CPU		
▲ Startup₹↓ Restart	Thunderbolt ^w 3 Intel® AMT Setup UI		Graphical 🗸
Lenovo.			
F1 General Help	F9 Setup Defaults	Esc Back	F10 Save and Exit

• Enter the "Storage" category and change the "Controller Mode" to "AHCI mode"

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ThinkPad	← ConfigStorage		
Setup	> Controller Mode		RST mode
🔂 Main			
የጳ Config			
② Date/Time			
🕂 Security			
⚠ Startup			
Restart			
Lenovo.			
F1 General Help	F9 Setup Defaults	Esc Back	F10 Save and Exit

• Select "Yes" to proceed with changing the Controller Mode

ThinkPad	← Config Storage		
Setup	> Controller Mode		AHCI made ¥
Main Config Date/Time Security Startup Restart Lenovo.	Setup Warning The existing data stored on the drives may be damaged when changing Controller Mode. Do you want to proceed?		
/1 General Help	79 Saturg Dalauhs	ter Bask	70 Sam and Salt

Lenovo

• Tab over to the "Security" menu tab and enter the "Secure Boot" category

ThinkPad	Security → Password		î
Setup	 → Fingerprint → Security Chip 		
 Main 아이 Config Date/Time 	 → UEFI BIOS Update Option → Memory Protection → Virtualization → I/O Port Access 		
 ▲ Security ▲ Startup ▲ Restart 	→ Internal Device Access → Absolute Persistence® Module → Secure toot		
Lenovo.	 → Intel® SGX → Device Guard → ThinkShield secure wipe 		
F1 General Help	F9 Setup Defaults	Esc Back	F10 Save and Exit

• Set "Secure Boot" to "Off"

ThinkPad	 ← Security Secure Boot 		
Setup	> Secure Boot		off
🙃 Main	> Secure Boot Mode		User Mode
የ\$የ Config	> Secure Boot Key State		Customized
① Date/Time	> Reset to Setup Mode		Enter
🔒 Security	> Restore Factory Keys		Enter
▲ Startup	Clear All Secure Boot Keys		Enter
رک Restart	-> Key Management		
Lenovo.			
F1 General Help	F9 Setup Defaults	Esc Back	F10 Save and Exit

Lenovo

• Press function F10 key to save and exit BIOS setup.

ThinkPad	← Security Secure Boot	
Setup	> Secure Root	e
A Main	> Secure Root Mode	User Made
옆 Config ② Date/Time	Setup Confirmation	ine
🛆 Security	Save configuration changes and exit now?	ine .
t Startup t Restart	-> Kay Management	
Lenovo.		
Fi General Help	10 Sing Selads So Rel	k 10 Sam and Salt

Section 2 – Discrete vs Hybrid Graphics

The Lenovo ThinkPad P15, P17, and P1 Gen 3 systems offer both Nvidia and Intel graphics.

- Note that it is necessary to switch the Graphics Device to "Hybrid Graphics" in order to avoid graphical issues during installation. After installing the NVIDIA graphics driver in Section 4, "Discrete Graphics" can be used. Alternatively, you can disable the Nouveau driver during installation if you would like to continue using "Discrete Graphics".
- Boot into BIOS and tab over to the "Config" menu option, then select the "Display" option.

ThinkPad	Config			
	→ Network			
Setup	\rightarrow USB \rightarrow Keyboard/Mouse			
🞧 Main	Display		I	
የፅየ Config	\rightarrow Power \rightarrow Beep and Alarm			
O Date/Time	→ Storage			
요 Security	→ СРИ			
▲ Startup	→ Thunderbolt [™] 3			
Restart	→ Intel® AMT			
	> Setup UI		Graphical	~
Lenovo.				
F1 General Help	F9 Setup Defaults	Esc Back		F10 Save and Exit

• Ensure that the "Graphics Device" is set to "Hybrid Graphics".



Section 3 – Installing Ubuntu Linux 20.04 LTS

Please refer to the following instructions and screenshots on how to install Ubuntu 20.04 LTS on the Lenovo ThinkPad P15, P17, and P1 Gen 3.

- Insert the Ubuntu 20.04 LTS installation media (either through USB or CD/DVD).
- Power on the system and press the F12 function key whenever the following Lenovo splash screen appears.



• Select the Linux bootable installation media from the F12 boot menu list.

	GNU GRUB version 2.04
Albertu (see probles) (Bartu (sei probles) 201 Mrsil (for sourcturens) 202 Mrsil (for sourcturens) 202 Mrsil (see Jone 202 Mrsil (see Jone) 202 Mrsil (see Jone) 202 Mrsil (see Jone)	
use the 1 and 1 keys to select which entry is highlighted. Press erref re boot the selected 05. (° to golt the commands before booting or `c' for a command- The highlighted entry will be executed automatically in 5s.	

• Highlight "Install Ubuntu" from the GRUB boot menu and press 'enter'.

ThinkPad	Boot Menu ubuntu NVMe0: KXG6AZNVIT02 TO USB HDD: USB SanDisk 3.20 > PXE BOOT	DSHIBA Gen1		
🛧 Boot Menu				
የ 상 App Menu				
Lenovo.				
11 Move	Expand/Collapse	Tab Switch Menu	Enter Select	Esc Exit

• The Ubuntu Linux Welcome Screen should appear. Click "Install Ubuntu" to proceed

	Nov 23 19:48	46 -
	Install	•
Welcome Usersor inconcesse Bosanski Cecitina Cecitina Cecitina Cecitina Cecitina Espanol Espanol Espanol Espanol Espanol Caelige Oriri Caelego Shoul Hinatski Userson	Try Ubuntu Try Ubuntu tan try Ubuntu without making any changes to your computer, directly from this CD. you're ready, you can install Ubuntu alongside (or instead of) your current operating system ident take too long.	em. This
	• • • • • • • • • • • • • • • • • • • •	

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• Select the appropriate keyboard layout and language and "Continue".

	Nov 23 19:48	•0 il -
	Install	
Keyboard lay	out	
Choose your keyboard English (karatalan) English (karatalan) English (Kilora) English (Kilora) English (Kilora) English (Kilora) English (Kilora) English (Kilora) English (Kilora) English (Kilora) English (Kilora) Esperanto Esperanto Esperanto Esperanto Esperanto Esperanto	layout: English (US) English (US)-Cheroke English (US)-Cheroke English (US)-Cheroke English (US)-Cheroke English (US)-Cheroke English (US)-English (Dvorak, alt. inti, English (US)-English (Dvorak, alt	

• Select "Normal Installation" as well as "Install third-party software..." then "Continue".

Nov 23 19:48	40 H =
Updates and other software	
What apps would you like to install to start with? Image: Anomal installation Web browse, sublex, office software, game, and medu players. Image: Ima	

• Choose the installation type. For simplicity, this guide was done using "Erase disk and install Ubuntu"

Nov 23 19:49	40-1 1 -
Install 8	
Installation type	
This computer currently has Ubuntu 20.04.1 LTS on it. What would you like to do?	
Erase Ubuntu 20.04.1 LTS and reinstall Wenning: This will delet all your Ubuntu 20.04.1 LTS programs documents photos music, and zour other Files	
Install Ubunitu 20.04.1 LTS alongside Ubunitu 20.04.1 LTS Documents, music, and other personal files will be last. You can choose which operating system you want each time the computer starts up.	
 Ersse disk and install Ubuntu Warning: This will delete all your privans, documents, photos, music, and any other files in all operating systems. Advanced Factures	
Something else You can create or resize partitions yournelf, or choose multiple partitions for Ubuntu.	
Quit Back Install Now k	

• Select "Continue" to confirm changes will be made to the disk.

	Nov 23 19:49	• ا∎ -
the second disk in the second second	Install	
	Installation type	
	This computer currently has Ubuntu 20.04.1155 on it. What would you like to do? Write the changes to disks? Image: Computer changes is the below will be written to the disks. Otherwise, you will be able to make further changes manually. WARNING: This will destroy all data on any partitions you have removed as well as on the partitions that are going to be formatted. The partition tables of the following devices are changed: (dev)/mmemory The following partitions are going to be formatted: partition #2 of /dev/nomeont as ESP partition #2 of /dev/nomeont as ESP Exack Imchall Now	
	•••••	

• Choose the appropriate geographical location and select "Continue".



• Fill out the appropriate information and select "Continue".

Nov 23 14:49	40 HB +
Install	
Who are you?	
Your name: Your computer's name: The name it uses when it talk to other computers. Pick a username: Choose a password: Confirm your password: Log in automatically Require my password to log in Back Continue	
•••••	

Lenovo

• Ubuntu installation progress bar will be shown.

Nov 23 1	4:49	40 - 1 -
Instal	u la	
Welcome to Ubuntu		
Fast and full of new features, the latest version of Ubuntu makes computing easier than ever. Here are just a few cool new things to look out for		
Almost finished copying files	Skip	

• Once the installation completes, select "Restart Now".



• Remove the installation media and press ENTER.



• Ubuntu Desktop Screen:



Section 4 – Installing the Nvidia Graphics Driver

In order to get optimal performance out of the Nvidia GPU, it's a good idea to ensure the latest Nvidia graphics driver is installed.

Note that by selecting "Install third-party software..." during the Ubuntu installation in Step 3, a compatible NVIDIA Driver should already be installed.

To install the latest Nvidia graphics driver, connect to the internet via a wireless or wired connection, and then follow the steps below:

• Detect the model of your Nvidia GPU and the recommended driver using this command.

ubuntu-drivers devices



• You can then run the following command to auto install all recommended drivers.

sudo ubuntu-drivers autoinstall



- In this case, the most recent driver was already installed by selecting "Install third-party software..." during the Ubuntu installation in Step 3.

• Once the installation is complete, reboot the system.

sudo reboot

• Use the following command to verify the Nvidia driver is loaded.

nvidia-smi

Activities	s 🕑 Termir	nal -								
6	F									
	Thu Jan 21	vo-Thi 11:13:	1kPad-P1 25 2021	15-Gen-1:	~\$ nvidi	a-smi				
	NVIDIA-SM	I 440.	100	Driver	Version:	440.10	90	CUDA Versi	on: 10.2	ļ
	GPU Name Fan Temp	Perf	Persis Pwr:Us	stence-M sage/Cap	Bus-Id	Memor	Disp.A y-Usage	Volatile GPU-Util	Uncorr. ECC Compute M.	Ì
	0 Quad N/A 57C	ro RTX P8	3000 5W	Off / N/A	0000000 234M	0:01:00 iB /	0.0 On 5934MiB	 7%	N/A Default	+
	+ Processes GPU	: PID		Process	name				GPU Memory Usage	+
	======================================	1003	ç	/usr/li	b/xorg/X	======= org			======================================	=
A	lenovo@leno	vo-Thi	nkPad-P1	15-Gen-1:	~\$				129MLB	+

- The graphics device can now be set to "Discrete Graphics" in BIOS (see Section 2)

Section 5 – Revision History

Version	Date	Author	Changes/Updates
1.0	1/22/2021	Hady Asad	Initial launch release