Ubuntu 18.04 LTS Linux Setup Guide

For ThinkStation P330





Section 1 - BIOS Setup and Preinstallation Steps

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

- For UEFI/GPT installations (recommended):
 - Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.
 - o Tab over to the "Exit" menu tab and set "OS "Optimized Defaults" to "Enabled".

	Lenovo BIOS Setup Utility						
	Main Devices Advance	l Power	Security	Startup Exit			
	Save Changes and Exit Discard Changes and Exit Load Optimal Defaults OS Optimized Defaults		(D i sab	ledl	Some sett changed a "Enabled Microsoft Certifica Affected Summart	Help Message tings below are accordingly. Select I" to meet t(R) Windows 10 (R) tion Requirement. settings are CSM Boot mode. Boot	
		[OS Opti Enabled Disabled	mized Defaults —	Priority.	Secure Boot.	
F	F1 Help †4 Se ESC Exit ↔ Se	lect Item lect Menu	+/- Enter	Change Values Select⊳Sub-Menu	F9 F10	Setup Defaults Save and Exit	

• Select "Yes" at the confirmation screen indicated below.



• Tab over to the "Security" menu tab, select "Secure Boot", and set the option to "Disabled".

Lenovo BIOS Setup Utility Security					
Secure H	oot	Help Message			
System Mode Secure Boot Restore Factory Keys Reset Platform to Setup Mode Exit Deployed Mode	Deployed Mode [Enabled]	[Enabled] Enables Secure Boot,BIOS will prevent un-authorised OS be loaded. [Disabled] Disables Secure Boot. When Secure boot set to Enabled. CSM would be automatically disabled.			
	Disabled Enabled				
F1 Help ↑↓ Select Item ESC Exit ↔ Select Menu	+/- Change Values Enter Select►Sub-Menu	F9 Setup Defaults F10 Save and Exit			

• Press F10 to "Save and Exit" the BIOS setup menu.



o Insert the Ubuntu install 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 "UEFI" option from the F12 boot menu.



• For Legacy/MBR installations (not recommended):

- Boot into BIOS by pressing the function F1 key at the "Lenovo" splash screen.
- o Tab over to the "Exit" menu tab and set "OS "Optimized Defaults" to "Disabled".

Lenovo BIOS Setup Utility Security						
Secu	Secure Boot			Help Message		
System Mode Secure Boot Resetre Factory Keys Reset Platform to Setup Mode Exit Deployed Mode Key Management	Deploye (Enable Disabl Enable	d Mode dJ ure Boot ed d	Enabled Boot.BII un-autho [Disable Hon Sec Enabled, automat:	11 Enables Secure 15 will prevent prised OS be loaded. edl Disables Secure cure boot set to . CSM would be lcally disabled.		
F1 Help ↑↓ Select ESC Exit ↔ Select	Item +/- Menu Enter	Change Values Select⊧Sub-Menu	F9 F10	Setup Defaults Save and Exit		

• Select F10 to "Save and Exit" BIOS.



• Insert the Ubuntu install 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 "Legacy" option from the F12 boot menu.

Startup Device Menu				
M.2 Drive 1: SAMSUNG MZUKW512HMJP-000L7 Legacy: SAMSUNG MZUKW512HMJP-000L7 Network 1: Legacy: IBA CL Slot 00FE v0113 UEFI: PXE IPU4 Intel(R) Ethernet Connection (7) I219-LM UEFI: PXE IPU6 Intel(R) Ethernet Connection (7) I219-LM USB HDD: Samsung Flash Drive 1100 Legacy: Samsung Flash Drive 1100 UEFI: Samsung Flash Drive 1100, Partition 1 Enter Setup				
↑ and ↓ to move selection				

Section 2 – Installing Ubuntu 18.04 LTS

Please refer to the following instructions and screenshots on how to install Ubuntu 18.04 LTS on the ThinkStation P330 workstations.

• Highlight the "Install Ubuntu" from the Installer menu and press Enter.

	GNU GRUB	version 2.02
Try Ubuntu without installing *Install Ubuntu OEM install (for manufacturers)		
Check disc for defects		
Use the ↑ and ↓ keys to select Press enter to boot the select for a command-line. ESC to ret	t which ent ted OS, `e' turn previo	ry is highlighted. to edit the commands before booting or `c' us menu.



• Select the language to use during the installation process and "Continue".

Mon 18:25	۰ 🕹 🗰
Install	
Welcome Welcome	
English Español Español Eukara Pronçais Caelleo Caeleo Hivatski Kismisa Italiano Kurdi Latviski	
Quit Back Continue	

• Select your keyboard layout and "Continue".

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Instell	
Keyboard layout	
Choose your keyboard layout: English (Johan) English (J	
Quit Back Continue	

• Select "Normal Installation" and "Continue".

Mon 1825	• ا ال -
0	
inatali O	
Updates and other software	
What apps world you like to install to start with! Itermal installation White office offware, games, and meda players. Minimal installation Web Seware and basic utilities. Other options Iteration installation Download codates: while installing Ubortu. This software is subject to likene terms included with its documentation, Seme is proprietary. Quit Back	

• Select "Erase disk and install Ubuntu" option and "Install Now".

Mon 18:26	• ال •
install 💿	
Installation type	
This computer currently has no detected operating systems. What would you like to do?	
The new York of the second program as a second nucleon and the new York of the second second nucleon and the second se	
Use LVM with the new Ubuntu installation This will set to Lopical Volume Management, it allows taking snapshots and easier partition resizing.	
Something else. You can cruite or resize partitions yourself, or choose multiple partitions for Ubuntu.	
Quit Back Install New	

• Select "Continue" to confirm making changes to the disk.

Mon 18/26	م الله الله ال
Installation type	
This computer currently has no detacted operating systems. What would you like to do? Fire disk and install Ubuntu Write the changes to disks? If you continue, the changes listed below will be written to the disk. Otherwise, you will be able to make further changes manually. The partition tables of the following devices are changed: //der/mmeth1 The following partitions are going to be formatted: partition #2 of /der/immeth1 as £55 partition #2 of /der/im	
•••••••	

• Select your location from the map and "Continue".

Mon 18:26	• ۵ •
Install Where are you?	
New York	
Back Continue	

• Enter a Username and Password and select "Continue".

	Mon 14:26		• 8 -
	Install		
Who are you?			
Yourn Your computer's n Pick a usern Choose a pass Confirm your pass	ame: enovo mame: ovo-ThinkStation P330 & The rune it uses when it tals to other comp ame:	word Back Continue	

• Installing Ubuntu.

Mon 14:26	+ ڻ -
Install Welcome to Ubuntu Fast and full of new features, the latest was worked on the withings then over, first are just a few cool new things to book out for	
Almost Finished copying Files	

Lenovo

• Installation Complete. Select "Restart Now".



• Ubuntu desktop screen.



Section 3 – Installing the Nvidia Graphics Driver

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

To install the latest Nvidia graphics driver, follow the steps below:

- <u>Step 1</u>:
 - Download the Nvidia graphics driver from the Lenovo Support Website. <u>https://download.lenovo.com/pccbbs/thinkcentre_drivers/l3vdo66ws14.zip</u>
- <u>Step 2:</u>
 - As superuser (root), blacklist the Linux Nouveau driver.
 - Edit /etc/modprobe.d/blacklist.conf and add the line "<u>blacklist nouveau</u>".
 # sudo nano /etc/modprobe.d/blacklist.conf
 - Run the command from a terminal window:
 # <u>sudo update-initramfs –u</u>
 - Reboot the system.
- <u>Step 3</u>:
 - During a system reboot, press the "ESC" button on the keyboard to enter the Ubuntu grub boot menu.

System setup			

• Press 'e' to edit the kernel boot parameter and add "*nomodeset*" to the Linux boot command line.

c48d34	<pre>mms 'Ubuntu' recordfail load_video gfxmode \$linux_gfx_mode insmod gzio if [x\$grub_platform = xxen]; then insmod xzio; insmod lzopio; fi insmod part_gpt insmod ext2 if [x\$feature_platform_search_hint = xy]; then searchno-floppyfs-uuidset=root 50a94072-5b91-4e90-b3a5-0d7c65c48d34 else searchno-floppyfs-uuidset=root 50a94072-5b91-4e90-b3a5-0d7c65c48d34 fi /nom/boot/vmlinuz-5.0.0-25-generic root=UUID=50a94072-5b91-4e90-b3a5-0d7c6' nomodesetquiet splash \$vt_handoff</pre>
Min	nimum Emacs-like screen editing is supported. TAB lists completions. Press Ctrl-x
or	F10 to boot, Ctrl-c or F2 for a command-line or ESC to discard edits and return
to	the GRUB menu.

• Press CTRL-X or F10 to boot the system.

• <u>Step 4</u>:

• At the Ubuntu desktop screen, open a terminal window and stop X-windows by using the following command:

init 3

<u>Step 5</u>:

• Log in as superuser (root) using the credentials created above.

Ubuntu 18.0	4.2 LTS	lenovo-Think	Station-P330	0 tty1		
lenovo-Thin Password:	kStatio	n-P330 login:	lenovo			
Last login: Welcome to	Fri Aug Ubuntu 1	g 16 10:10:12 18.04.2 LTS (EDT 2019 on GNU/Linux 5	n tty1 .0.0-25-	generic x	86_64)
* Document * Manageme * Support:	ation: nt:	https://help https://lands https://ubum	.ubuntu.com scape.canon tu.com⁄aduan	ical.com ntage		
* Canonica – Reduce https:	l Livepa system //ubuntu	atch is avail reboots and com/livepat	able for in: improve kern ch	stallati nel secu	on. rity. Act	ivate at:
479 package 234 updates	s can be are sec	e updated. curity update:	s.			
Your Hardwa lenovo@leno [sudo] pass root@lenovo	re Enabl vo-Thinl word for -ThinkS1	lement Stack «Station-P330 r lenovo: tation-P330:/	(HWE) is suj :~\$ sudo su home∕lenovo:	pported	until Apr	il 2023.

• <u>Step 6</u>:

• Connect the system to the internet and install the "Development Tools" libraries.

sudo apt-get update

sudo apt-get install build-essential

root@lengug=ThinkStation=P330:/home/lengug/Deskton/I3UD062US14# ant-get undate
Get 1 http://security.uburty.com/uburty.bingic-security_InBelease [88,7 kB]
http://us.archive.ubuntu.com/ubuntu bionic InRelease
Get:3 http://us.archive.ubuntu.com/ubuntu bionic-undates InRelease [88.7 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu bionic-backnorts InRelease [74.6 kB]
Get:5 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [22.7 kB]
Get:6 http://security.ubuntu.com/ubuntu bionic-security/main DEP-11 64x64 Icons [31.7 kB]
Get:7 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 Packages [589 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [709 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/universe i386 Packages [579 kB]
Get:10 http://security.ubuntu.com/ubuntu bionic-security/universe Translation-en [195 kB]
Get:11 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [42.0 kB]
Get:12 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 48x48 Icons [16.4 kB]
Get:13 http://security.ubuntu.com/ubuntu bionic-security/universe DEP-11 64x64 Icons [111 kB]
Get:14 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:15 http://us.archive.ubuntu.com/ubuntu bionic-updates/main i386 Packages [571 kB]
Get:16 http://us.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [282 kB]
Get:17 http://us.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [66.6 kB]
Get:18 http://us.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 64x64 Icons [124 kB]
Get:19 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe i386 Packages [974 kB]
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Get:21 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe Translation-en [305 kB]
Get:22 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [252 kB]
Get:23 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 48x48 Icons [207 kB]
Get:24 http://us.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64 Icons [448 kB]
Get:25 http://us.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:26 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 Packages [4,000_B]
Get:27 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe i386 Packages [4,008 B]
Get:28 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe Translation-en [1,856 B]
Get:29 http://us.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-11 Metadata [7,712 B]
fetched 6,797 kB in 1s (4,625 kB/s)
Reading package lists Done
root@lenovo-ThinkStation-P330:/home/lenovo/Desktop/L3VD062WS14# apt-get install build-essential

- <u>Step 7</u>:
 - Browse to the directory location to where the Nvidia driver was downloaded and run the following commands to unzip and install the driver.

unzip l3vdo66ws14.zip

sudo sh NVIDIA-Linux-x86_64-410.104.run

<u>Step 8</u>:

• Select "Continue Installation" at the pre-install script failed message.

The distribution-provided pre-install script failed! Are you sure you want to continue? Continue installation Abort installation NUIDIA Software Installer for Unix/Linux uww.nuidia.com NUIDIA Accelerated Graphics Driver for Linux-x86_64 (410.104) Building kernel modules	NVIDIA Accelerated Graphics Driver for Linux-x86_64 (410.104)	
The distribution-provided pre-install script failed! Are you sure you want to continue? Continue installation Abort installation Abort installation MUDIA Software Installer for Unix/Linux www.nvidia.com NVIDIA Accelerated Graphics Driver for Linux-x86_64 (410.104) Building kernel modules		
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NVIDIA Software Installer for Unix/Linux www.nvidia.com NUIDIA Accelerated Graphics Driver for Linux-x86_64 (410.104) Building kernel modules	Continue Installation HDort Installation	
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Building kernel modules		
Building kernel modules 		
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Building kernel modules		
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- <u>Step 9</u>:
 - Select "OK" at the warning message where the installer couldn't find 32-bit compatible libraries.



- <u>Step 10</u>:
 - Select "Install and overwrite" for the libglvnd libraries.



• <u>Step 11</u>:

• Select "Yes" to update the X-configuration file to use the Nvidia X driver.



- Step 12:
 - Select "OK" at the completion of the driver installation process.

NVIDIA Accelerated Gr	aphics Driver	for Linux-x86_64	(410.104)	
Your X configuration file has been such	cessfullu upda	ted. Installati	ion of the NVIDIA	Accelerated
Graphics Driver for Linux-x86_64 (vers	ion: 410.104)	is now complete.		
	OK			
NVIDIA Software Installer for Unix/Lin	ux		աև	w.nvidia.com

- <u>Step 13</u>:
 - Verify the Nvidia driver has been installed successfully and is loaded properly by running the following command:

nvidia-smi

NUID	IA-SMI	410.10	94	Driver	Version	: 410.	104	CU	DA Versio	on: 10.0	
GPU Fan	Name Temp	Perf	Persis Pwr:Us	tence-MI age/CapI	Bus-Id	Memo	Disp.A ry-Usage		Volatile GPU-Util	Uncorr. E Compute	ECC M.
0 43%	Quadro 49C	D P620 P0	N∕A	0ff / N/A +	000000 0 	====== 00:01: MiB ∕	00.0 Off 1997MiB	 -+-	2%.	======= Defau 	
Proce GPU	esses:	PID	 Туре	Process	name					GPU Memo Usage	ory

• <u>Step 13</u>:

• Reboot the system.

Section 4 – Installing the Network Wireless Driver

The wireless network device offered for the P330 is native to Ubuntu 18.04 LTS; therefore, you will not need to install any additional drivers separately.

Section 5 – Installing the Network LAN Driver

The network LAN device is native to Ubuntu 18.04 LTS; therefore, you will not need to install any additional drivers separately.

Section 6 – Revision History

Version	Date	Author	Changes/Updates
1.0	10/21/2019	Jason Moebs	Initial launch release