Debian Linux Setup Guide

For ThinkStation P340 Tower/SFF

***Unofficial support of Debian 10.04 and later





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Section 1– BIOS Setup & 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.



• Check whether Secure Boot is disabled. If found enabled, disable it.



• Save changes by pressing F10 function key.



Section 2 – Installing Debian 10.04

Please refer to the following instructions and screenshots on how to install Debian 10.04 on the Lenovo ThinkStation P340.

- Insert the Debian 10.04 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.



• Highlight Install Ubuntu from the GRUB boot menu and hit enter.

	Debia	an GNU/Linux 10.4.0 Debian GNU/Linux UEA	FI Installer menu	
	Graphical install Install Advanced options Accessible dark com Install with speech	 htrast installer menu h synthesis		
Enter: E:	Select Edit Selection	C: GRUB Comman	nd line	0

• Select the appropriate language and press Continue.

Odebian					
Select a language					
Choose the language t default language for t Language:	o be used for the installation process. The selected language will also be the le installed system.				
chinese (simplified)	- 屮乂(间体)	5			
Chinese (Traditional)	- 中文(繁體)				
Croatian	- Hrvatski				
Czech	- Čeština				
Danish	- Dansk	=			
Dutch	- Nederlands				
Dzongkha	- 译和				
English	- English				
Esperanto	- Esperanto				
Estonian	- Eesti				
Finnish	- Suomi				
French	- Français				
Galician	- Galego				
Georgian	- ქართული				
German	- Deutsch				
		-			
Screenshot	Go Back Contin	ue			

• Select the user location and press Continue.



• Configure the keyboard by choosing the appropriate keyboard language and press Continue.



• In a case the ethernet card is not detected by Debian, select the "no ethernet card" option and press continue.



• Select Continue to acknowledge that no network interfaces were detected.



• Enter a hostname for the system and select Continue.



• Set a root password and select Continue.

Odebian				
Set up users and passwords				
You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.				
A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.				
The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.				
Note that you will not be able to see the password as you type it. Root password:				
Show Password in Clear				
Please enter the same root password again to verify that you have typed it correctly. Re-enter password to verify:				
Show Password in Clear				
Screenshot Go Back Continue				

• Enter a username to create a user and press Continue.



Lenovo

• Create a strong password for the newly created user and press Continue.

Odebia	n
Set up users and passwords	
A good password will contain a mixture of letters, numbers a regular intervals. Choose a password for the new user:	nd punctuation and should be changed at
•••••	
Show Password in Clear	
Please enter the same user password again to verify you hav Re-enter password to verify:	ve typed it correctly.
Show Password in Clear	
Screenshot	Go Back Continue

• Select an appropriate time zone to configure the clock and press Continue.

Odeb	ian
Configure the clock	
If the desired time zone is not listed, then please go ba country that uses the desired time zone (the country will Select your time zone:	ck to the step "Choose language" and select a nere you live or are located).
Eastern	
Central	
Mountain	
Pacific	
Alaska	
Hawaii	
Arizona	
Samoa	
Samoa	
Screenshot	Go Back Continue

• Choose an appropriate option for partitioning the disk. If the user selects "Guided – use entire disk", Debian will erase the content and use the entire disk for OS installation.

Odebian	
rtition disks	
e installer can guide you through partitioning a disk (using different standard schemes refer, you can do it manually. With guided partitioning you will still have a chance later t istomise the results. you choose guided partitioning for an entire disk, you will next be asked which disk sho artitioning method:	a) or, if you o review and ould be used.
uided - use the largest continuous free space	
uided - use entire disk	
uided - use entire disk and set up LVM	
uided - use entire disk and set up encrypted LVM	
tanual	
	Cantinua

Select disk to partition and press Continue. ٠



Choose an appropriate scheme for partitioning and press Continue. •



• Select "All files in one partition" and press Continue.



• Select "Finish partitioning and write changes to disk" option after confirming the partitions and press Continue.

	Odebian							
Par	tition d	lisks						
Th (fi	nis is an c le systen	overview n, mount	of your current point, etc.), a	ly co free	onfigu spac	ured partitions a e to create part	and mount points. Select a partition to modify its settings titions, or a device to initialize its partition table.	
	>	#1	629.1 MB	в		fat32	EFI System P	-
	>	#2	1.1 GB			xfs		
	>	#3	998.5 GB		к	lvm		
	>		728.6 kB			FREE SPACE		
	SCSI3 ((0, 0, 0) (9	db) - 1.0 TB A	TA S	T10	00NM0055		
	>		1.0 MB			FREE SPACE		
	>	#1	536.9 MB	в	f	ESP		
	>	#2	991.2 GB		f	ext4	/	
	>	#3	8.4 GB		f	swap	swap	
	>		728.6 kB			FREE SPACE		
~	SCSI5	(0, 0, 0) (sdc) - 15.5 GB	ADA	TAU	SB Flash Drive	9	
	>		1.0 MB			FREE SPACE		
	>	#1	15.5 GB			fat32	Microsoft Ba	
	Undo d	changes	to partitions	•				
	Finish	partitio	ning and writ	e ch	ang	es to disk		3
Se	creensh	ot	Help				Go Back Continue	

Lenovo

• Select "Yes" to write changes to the disk and press Continue.

Odebian	
Partition disks	
If you continue, the changes listed below will be written to the disks. Otherwise, you will be able to m further changes manually. The partition tables of the following devices are changed:	ake
SCSI3 (0,0,0) (sdb) The following partitions are going to be formatted: partition #1 of SCSI3 (0,0,0) (sdb) as ESP partition #2 of SCSI3 (0,0,0) (sdb) as ext4 partition #3 of SCSI3 (0,0,0) (sdb) as swap Write the changes to disks?	
○ No ● Yes	
Screenshot Contin	nue

• Choose an appropriate setting for network mirror and press Continue.



- Lenovo
- Choose to participate or not in the package usage survey and press Continue.



• Choose software to install from the list of software and press Continue.

Odebian	
Software selection	
At the moment, only the core of the system is installed. To tune the system to your needs, you choose to install one or more of the following predefined collections of software. Choose software to install:	u can
✓ Debian desktop environment	
C GNOME	
🗹 Xfce	
🗹 KDE Plasma	
☑ Cinnamon	
✓ … MATE	
✓ … LXDE	
✓ … LXQt	
✓ web server	
✓ print server	
✓ SSH server	
Standard system utilities	
Screenshot	Continue

• Select the package manager of choice and press Continue.



• Select "Yes" and press Continue.

Odebian	
Finish the installation	
System clocks are generally set to Coordinated Universal Time (UTC). The operating system zone to convert system time into local time. This is recommended unless you also operating system that expects the clock to be set to local time. Is the system clock set to UTC? No Ves	stem uses your use another
Screenshot Go B	ack Continue

• Remove the installation media and reboot the system by pressing Continue.



Lenovo

• Enter user credentials created during the installation to login into the system.



• Welcome to the Debian 10.04 login screen. Select "Yes" to save history.



Section 3 – RAID Installation

Currently Lenovo P340 systems only support single drive installations and not RAID installations in Debian 10.04 operating system due to unavailable kernel drivers.

Section 4 – LAN Connection

LAN is not native to Debian 10.04 and would require additional drivers for it to work. Plug in the installation media back into the system and follow the steps below to get the ethernet network to work.

• Open a terminal window and create a directory called "usb" under /media Command: mkdir /media/usb

Copy the contents of the installation media to the newly created directory "usb"

Command: cp -r /media/lenovo/DEBIAN\ 10_04/* /media/usb/

 lenovo@debian: ~
 ×

 File Edit View Search Terminal Help
 root@debian:/home/lenovo# mkdir /media/usb

 root@debian:/home/lenovo# cp -r /media/lenovo/DEBIAN\ 10_4/* /media/usb/

• Edit the source.list file to add the path to the installation media contents. Command: nano /etc/apt/source.list

Add the line deb [trusted=yes] file:/media/usb buster main contrib and comment out the rest. Make sure the source.list file looks like this-

Save and exit the editor with CTRL+X

	lenovo@debian: ~	×
I	le Edit View Search Terminal Help	
	GNU nano 3.2 /etc/apt/sources.list Modifie	d
#		
#	deb cdrom:[Debian GNU/Linux 10.4.0 _Buster Official amd64 DVD Binary-1 20200509-10:26]	/\$
#	eb cdrom:[Debian GNU/Linux 10.4.0 _Buster Official amd64 DVD Binary-1 20200509-10:26]/	b\$
d	b [trusted=yes] file:/media/usb buster main contrib	
##	eb http://security.debian.org/debian-security buster/updates main contrib eb-src http://security.debian.org/debian-security buster/updates main contrib	
#####	buster-updates, previously known as 'volatile' A network mirror was not selected during install. The following entries are provided as examples, but you should amend them as appropriate for your mirror of choice.	
# #	deb http://deb.debian.org/debian/ buster-updates main contrib deb-src http://deb.debian.org/debian/ buster-updates main contrib	
^	Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^ Go To Line	

 Install the development tools packages and linux-headers from the installation media contents.
 Command: apt-get install 'build-essential'
 Command: apt-get install linux-headers*

lenovo@debian: ~	×
File Edit View Search Terminal Help	
<pre>root@debian:/home/lenovo# apt-get install 'build-essential' Reading package lists Done Building dependency tree Reading state information Done build-essential is already the newest version (12.6). build-essential set to manually installed. 0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded. root@debian:/home/lenovo# apt-get install linux-headers*</pre>	

• In case of having trouble installing linux-headers, follow the steps below and install linux-headers again-

apt-get update apt-get upgrade apt-get dist-upgrade

- Download the latest network drivers from Intel on another computer with internet access and copy it to the Debian system. Extract the zip package.
- Browse to the directory where the network driver is stored and extract e1000e-3.8.4.tar.gz file using the command tar zxf e1000e-3.8.4.tar.gz

lenovo@debian: ~×File Edit View Search Terminal Helproot@debian:/home/lenovo/Downloads/PR01000/LINUX# lse1000e-3.8.4igb-5.3.5.61license_gpl.txte1000e-3.8.4.tar.gzigb-5.3.5.61.tar.gzreadmefirst.txt

• Browse to the extracted directory by cd e10002-3.8.4/src and compile the binary files using the command make.

root@debian:/home/lenovo/Downloads/PR01000/LINUX# cd e1000e-3.8.4 e1000e-3.8.4/ e1000e-3.8.4.tar.gz root@debian:/home/lenovo/Downloads/PR01000/LINUX# cd e1000e-3.8.4/src/ root@debian:/home/lenovo/Downloads/PR01000/LINUX/e1000e-3.8.4/src# make

• Install the network driver with the help of make install

					lenovo@debian: ~	×
File	Edit	View	Search	Terminal	Help	
root	@debi	an:/ho	ome/len	ovo/Downl	oads/PR01000/LINUX/e1000e-3.8.4/src# make	install 🛛

Reboot the system with systemctl reboot now

	lenovo@debian: ~						×
File	Edit	View	Search	Terminal	Help		
root	@debi	an:/ho	ome/lend	ovo/Downl	oads/PR01000/LINUX/e1000e-3.8.4/src# systemctl r	reboot	now

- Once the system reboots, check for the internet connection at the top right corner of the desktop or in terminal window using the command ip address.
- Note: Once the ethernet driver gets working, the user will need to edit the /etc/apt/source.list file to uncomment some of the external Debian repository locations for patch/system updates using apt-get for not being limited to packages within the installation media.

Section 5 – Installing the Nvidia Graphics Driver

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

- Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from <u>here</u>.
- In order to get the Nvidia driver running, we will need to blacklist the nouveau driver. Follow the steps below-
 - Log in as root: sudo su
 - Create blacklist.conf file under the modprobe.d directory: gedit /etc/modprobe.d/blacklist.conf
 - o Blacklist nouveau driver by writing: blacklist nouveau

lenovo@debian: ~	×
File Edit View Search Terminal Help	
root@debian:/home/lenovo# gedit /etc/mo modprobe.d/ modules modules-load.d/ motd root@debian:/home/lenovo# gedit /etc/modprobe.d/blacklist.conf	

lenovo@debian: ~	×	Open 👻 🗈		*blacklist.conf	Save	=	×
File Edit View Search Terminal Help		blacklist nouvea	au				
No protocol specified							
(gedit:3104): dbind-WARNING **: 18:08:35.053: Could not open X display							
(gedit:3104): dconf-WARNING **: 18:08:35.080: failed to commit changes to The connection is closed	dconf:						
(gedit:3104): dconf-WANUING **: 18:08:35.082: failed to commit changes to The connection is closed Error creating proxy: The connection is closed (g-io-error-quark, 18) Error creating proxy: The connection is closed (g-io-error-quark, 18)	dconf:						
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes to The connection is closed	dconf:						
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes to The connection is closed	dconf:						
(gedit:3104): dconf-WANNING **: 18:08:35.202; failed to commit changes to The connection is closed	dconf:						
				Plain Text 👻 Tab Width: 8 👻 Ln 1,	Col 18	•	INS

• Run the command update-initramfs -u



- Reboot the system.
- Open a terminal window and run the command init 3.
- Once into init 3, login using the user credentials and browse to the directory storing the Nvidia driver.

Debian GNU/Linux 10 debian tty2	
debian login: lenovo Password: Linux debian 4.19.0−9–amd64 #1 SMP Debian 4.19.118–2 (2020–04–29) x86_64	
The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.	
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law. lenovo@debian:~\$ su Password:	
root@debian:/home/lenovo# cd Documents/ root@debian:/home/lenovo/Documents# ls NVIDIA-Linux-x86_64-440.64.run root@debian:/home/lenovo/Documents#	

 Make the Nvidia installer an executable by the command- chmod +x NVIDIA-Linuxx86-64-*

And run the Nvidia driver by- ./NVIDIA-Linux-x86_64-430.50.run



• Wait until the kernel modules are completely built.



• Select Yes for installing 32-bit compatibility libraries.

Install NVIDIA's 32-bit compatibility libra	aríes?	
NUIDID Software Installer for Univ/Linux		www.puidia.com

• Select Install and overwrite existing files.



• Wait until the installation is complete.



• Select Yes to run nvidia-xconfig utility to automatically update your X configuration file.



• Select OK once the X configuration file gets updated successfully.



 Execute the following command to verify the Nvidia driver is loadednvidia-smi

root@lenovo-ThinkPad-P1-Gen2:/home/lenovo/Desktop# nvidia-smi Wed Nov 6 16:39:08 2019							
NVIDIA-SMI 440.31 Driver Version: 440.31	CUDA Version: 10.2						
GPU Name Persistence-M Bus-Id Disp.A Fan Temp Perf Pwr:Usage/Cap Memory-Usage	Volatile Uncorr. ECC GPU-Util Compute M.						
0 Quadro T1000 Off 00000000:01:00.0 Off N/A 49C P0 7W / N/A 0MiB / 3908MiB	N/A 0% Default 						
t I Processes: I GPU PID Type Process name I====================================	GPU Memory Usage						
I No running processes found +							

• Reboot the system.



Section 6 – Revision History

Version	Date	Author	Changes/Updates
1.0	06/09/2020	Sayali Pawar	Initial launch release