Debian Linux 10 Installation

Lenovo ThinkStation P620

Lenovo



Contents

SECTION 1 – BIOS SETUP & PRE-INSTALLATION STEPS

SECTION 2 – INSTALLING DEBIAN 10.03

- SECTION 3 RAID ARRAY INSTALLATION
- SECTION 4 RAIDXPERT2 MANAGEMENT APPLICATION
- SECTION 5 INSTALLING THE AQUANTIA LAN DRIVER
- SECTION 6 INSTALLING THE NVIDIA GRAPHICS DRIVER
- SECTION 7 REVISION HISTORY

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.



• On the "Security" menu tab, scroll down and select the "Secure Boot" option.



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

Think Station	÷	Î
ΠΠΠΑΦΙΩΙΙΟΠ.	Secure Boot	
	System Mode	Deployed Mode
Start Menu		
🛱 Main	Secure Boot [Enabled] Enables Secure Boot.BIOS will prevent un-authorised OS be	Disabled 🗸
A Devices	loaded. [Disabled] Disables Secure Boot.	
₩ Advanced	When Secure boot set to Enabled, CSM would be automatically disabled.	
O Power		
🔒 Security	 Restore Factory Keys Restore Factory Keys will put secure boot into factory defaults. 	
📩 Startup	> Reset Platform to Setup Mode	
Exit	Reset to setup mode will move secure boot to setup mode.	
	> Exit Deployed Mode	
	Transition between Deployment and User Modes	
Lenovo		1
	> Key Management	·
F1 Help	↑↓ Select Item +/- Change Values	F9 Setup Defaults
ESC Exit	♦ Select Menu Enter Select > Sub-Menu	F10 Save and Exit
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• Save changes by pressing F10 function key.

ThinkStation	← Socure Pr	aat		~
Start Menu ⑥ Main 俗 Devices 术 Advanced	Secure Boo System Mode Secure Boot (Enabled) (Disabled) (When Secure	Save & reset Save & reset Image: Save configuration and reset?	Deployed Mode Disabled	~
 Power Security Startup Exit 	 Restore Factore F	Yes No		
FI Help ESC Exit	↑↓ Select Ite €⇒ Select Me	em +/- Change Values enu Enter Select > Sub-Men verver 2.20.0043 Convert IC/2003 American Prestrems InternationUL	F9 Setup Defaults nu F10 Save and Exit	

Section 2 – Installing Debian 10.03

Please refer to the following instructions and screenshots on how to install Debian 10.03 on the Lenovo ThinkStation P620.

- Insert the Debian 10.03 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. •



Select the appropriate language and press Continue. •

elect a language									
Choose the language t default language for t Language:	to be u he insta	sed for the i alled system	nstallatio 1.	n process	. The sele	cted lang	guage will a	lso be the	
cninese (simplinea)	- 44.	乂(间14)							-
Chinese (Traditional)	- 中:	文(繁體)							
Croatian	- Hr	rvatski							
Czech	- Če	eština							
Danish	- Dá	ansk							=
Dutch	- Ne	ederlands		ĸ					
Dzongkha	- Ě1	leil.							
English	- En	nglish							
Esperanto	- Es	speranto							
Estonian	- Ee	esti							
Finnish	- Su	uomi							
French	- Fr	ançais							
Galician	- Ga	alego							
Georgian	- ქა	ართული							
German	- D(eutsch							

• Select the user location and press Continue.

		Ode	ebian			
Select your location						
The selected location locate location locale. Normally this	on will be used to s should be the co	set your time zo ountry where yo	one and also for e u live.	xample to	help select	the system
This is a shortlist of listed.	locations based	on the language	e you selected. Ch	ioose "oth	er" if your lo	ocation is not
Country, territory or a	rea:					
Ireland						^
Israel						
New Zealand						
Nigeria			~			
Philippines						
Seychelles						
Singapore						
South Africa						_
United Kingdom						
United States						
Zambia						
2 mbabwe other						
other					F	<u> </u>
Screenshot					Go Back	Continue

Lenovo

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

	Odebian		
Configure the keyboard			
Keymap to use:			
American English			
Albanian			
Arabic			=
Asturian			
Bangladesh			
Belarusian			
Bengali	•		
Belgian			
Bosnian			
Brazilian			
British English			
Bulgarian (BDS layout)			
Bulgarian (phonetic layout)			
Burmese			
Canadian French			
Canadian Multilingual			
Catalan			 Image: Second sec
Screenshot		Go Back	Continue

• Enter a hostname for the system and select Continue.

	Odebian		
Configure the network			
Please enter the hostname for	this system.		
The hostname is a single word hostname should be, consult y you can make something up he <i>Hostname:</i>	that identifies your system to the netword our network administrator. If you are setti re.	k. If you don't know ng up your own hom	what your ie network,
debian			
	*		
Screenshot		Go Back	Continue

• Enter a domain name and select Continue.

Odebian		
Configure the network		
The domain name is the part of your Internet address to the right of your something that ends in .com, .net, .edu, or .org. If you are setting up a ho something up, but make sure you use the same domain name on all your c	host name. It is oft ome network, you ca computers.	en an make
Domain name:	•	
Screenshot	Go Back	Continue

• Set a root password and select Continue.



• Enter full name for the user and select Continue.

O debian		
Set up users and passwords		
A user account will be created for you to use instead of the root a	account for non-administr	ative activities.
Please enter the real name of this user. This information will be us emails sent by this user as well as any program which displays or name is a reasonable choice. Full name for the new user:	sed for instance as defau uses the user's real nam	llt origin for ne. Your full
lenovo		
*		
Screenshot	Go Back	Continue

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

Odebian		
Set up users and passwords		
Select a username for the new account. Your first name is a reasona start with a lower-case letter, which can be followed by any combina case letters.	ble choice. The username sh tion of numbers and more lo	ould wer-
Username for your account:		
lenovo		
•		
Screenshot	Go Back	Continue

Lenovo

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

Odebian		
Set up users and passwords		
A good password will contain a mixture of letters, numbers and pur regular intervals. Choose a password for the new user:	ictuation and should be c	hanged at
•••••		
Show Password in Clear		
Please enter the same user password again to verify you have type Re-enter password to verify:	ed it correctly.	
•••••		
☐ Show Password in Clear		
Screenshot	Go Back	Continue

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

Sontinue.	a piess
Odebian	
Configure the clock	
If the desired time zone is not listed, then please go back to the step "Choose country that uses the desired time zone (the country where you live or are loc Select your time zone:	e language" and select a cated).
Eastern	
Central	
Mountain	
Pacific	
Alaska	
Arizona	
Fast Indiana	
Samoa	
Sanoa	
Screenshot	Go Back Continue

• Select "Yes" for force UEFI installation and select Conitnue.

	Odebian	
Partition disks		
This machine's firmy operating systems a UEFI mode, it might If you wish to install systems, you have t operating system, y	vare has started the installer in UEFI mode but it look already installed using "BIOS compatibility mode". If y be difficult to reboot the machine into any BIOS-mode I in UEFI mode and don't care about keeping the abilit the option to force that here. If you wish to keep the ou should choose NOT to force UEFI installation here.	is like there may be existing ou continue to install Debian in e operating systems later. by to boot one of the existing option to boot an existing
	FF	
• Yes	×	
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
Partition disks
The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results. If you choose guided partitioning for an entire disk, you will next be asked which disk should be used. Partitioning method:
Guided - use entire disk Guided - use entire disk and set up LVM
Guided - use entire disk and set up encrypted LVM Manual
Screenshot Go Back Continue

• Select disk to partition and press Continue.

Odebian
Partition disks
Note that all data on the disk you select will be erased, but not before you have confirmed that you really want to make the changes. Select disk to partition:
SCSI1 (0,0,0) (sda) - 31.5 GB Specific STORAGE DEVICE
SCSI3 (0,0,0) (sdc) - 2.0 TB AMD-RAID Array 01
Screenshot Go Back Continue

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

Odebian
Partition disks
Selected for partitioning:
SCSI3 (0,0,0) (sdc) - AMD-RAID Array 01: 2.0 TB
The disk can be partitioned using one of several different schemes. If you are unsure, choose the first one. Partitioning scheme:
All files in one partition (recommended for new users)
Separate /home partition
Separate /home, /var, and /tmp partitions
Screenshot Go Back Continue

Lenovo

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

			(debia	n		
Partition	Partition disks						
This is an (file system	overview of y m, mount po	your currently configur int, etc.), a free space	ed par to cre	rtitions and moun ate partitions, or	t points. Select a device to init	a partition to modify its se ialize its partition table.	ttings
Config Config Config Config Config SCSI1 > ♥ SCSI3 >	ure softwa jure the Log jure encryp jure iSCSI w (0, 0, 0) (sda #1 prij (0, 0, 0) (sdc #1	re RAID gical Volume Manage ted volumes olumes) - 31.5 GB Specific S mary 31.5 GB I) - 2.0 TB AMD-RAID A 1.0 MB 536 9 MB	er STORA B Array (GE DEVIÇE fat32 01 FREE SPACE ESP			
>	#2	1.8 TB	f	ext4	/		
~	#3	274.7 GB	f	swap EREE SPACE	swap		
Undo o Finish Screensh	changes to partitionin ot H	partitions g and write changes	s to d	isk		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 further changes manually.	be able to make
The partition tables of the following devices are changed: SCSI3 (0,0,0) (sdc)	
The following partitions are going to be formatted: partition #1 of SCSI3 (0,0,0) (sdc) as ESP partition #2 of SCSI3 (0,0,0) (sdc) as ext4 partition #3 of SCSI3 (0,0,0) (sdc) as swap	
Write the changes to disks?	
 Yes 	
Screenshot	Continue

• Select "No" for network mirror and select Continue.

Odebian		
Configure the package manager		
A network mirror can be used to supplement the software that is included on the make newer versions of software available. You are installing from a DVD. Even though the DVD contains a large selection of missing. If you have a reasonably good Internet connection, use of a mirror is supplemented desided explanations are set of the second	e CD-ROM. T packages, s iggested if y	his may also some may be you plan to
Use a network mirror?		
• No		
⊖ Yes k		
Screenshot	Go Back	Continue

• 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, choose to install one or more of the following predefined collections of software. Choose software to install:	you can
🗹 Debian desktop environment	
✓ 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.



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

Odebi	an
Finish the installation	
Installation complete Installation is complete, so it is time to boot into yo installation media, so that you boot into the new s	our new system. Make sure to remove the system rather than restarting the installation.
	►
Screenshot	Go Back Continue

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



• Welcome to the Debian 10.03 login screen. Select "Yes" to save history.



Section 3 – RAID Array Installation

Please refer to the following instructions and screenshots on how to install Debian 10.03 using RAID arrays on ThinkStation P620.

Note: This is assuming storage RAID is already set up and configured in BIOS.

- Download the Linux AMD storage RAID driver from the Lenovo support site and copy the contents onto a directory labelled 'dd' from the root of a USB flash drive.
- Insert the Debian 10.03 installation media either through USB or CD/DVD.
- Power on the system and press the function F12 key when the Lenovo splash screen appears.



• Select the Debian 10.03 bootable installation media from the Startup Device Menu.



• Select the "Graphical Install" option from the GRUB boot menu, and press 'e'.



 Add the following lines to the end of the Linux kernel command parameter and press Ctrl-x.
 "break=mount modprobe.blacklist=ahci, nvme nomodeset"

Debian GNU/Linux 10.3.0
Debian GNU/Linux UEFI Installer menu
GNU GRUB version 2.02+dfsg1-20
setparams 'Graphical install'
set background_color=black lioux/iostall.amd/vmlinuz vga=788 quiet modprobe.blacklist=ahci\ ,nvme nomodeset
Minimum 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.
Enter: Select E: Edit Selection C: GRUB Command line

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 At the "BusyBox" shell, insert the USB flash drive with the Linux AMD RAID driver into a USB port of the system and mount it using the following command: "mount -t vfat /dev/sdb1 /tmp"

<u>Note:</u> /dev/sdb1 may need to be changed depending on the number of devices attached to the system.



• Copy the contents of the driver to the root directory using the following command:

"cp -ap /tmp/dd /"



• Install the driver by running the following command: "/dd/pre_install"



 Unmount and remove the USB flash drive by running the following command: "umount /tmp"



• Exit the "BusyBox" shell by running the following command: "exit"



• The Debian 10.03 welcome screen should appear. Choose the appropriate language and select "Continue".

	Odebian
Select a language	
Choose the language t default language for th	to be used for the installation process. The selected language will also be the he installed system.
Language:	
Chinese (Junphined)	
Croatian	
	- Cestina
Danish	- Dansk =
Dutten	- Nederlands
Dzongkha	
English	- English
Esperanto	- Esperanto
Estonian	- Eesti
Finnish	- Suomi
French	- Français
Galician	- Galego
Georgian	- ქართული
German	- Deutsch
Screenshot	Go Back Continue

• Select your location and press "Continue".

Odebian	
Select your location	
The selected location will be used to set your time zone and also for example to help locale. Normally this should be the country where you live.	select the system
This is a shortlist of locations based on the language you selected. Choose "other" if listed.	your location is not
Country, territory or area:	
Ireland	^
Israel	
New Zealand	
Nigeria	
Philippines	
Seychelles	
Singapore	
South Africa	
United Kingdom	
United States	
Zambia	
Zimbabwe	
other	
Screenshot Go	Back Continue

• Configure the keyboard selecting an appropriate language and press "Continue".

	Odebian	
Configure the keyboard		
Keymap to use:		
American English		
Albanian		
Arabic		
Asturian		
Bangladesh		
Belarusian		
Bengali	•	
Belgian	-	
Bosnian		
Brazilian		
British English		
Bulgarian (BDS layout)		
Bulgarian (phonetic layout)		
Burmese		
Canadian French		
Canadian Multilingual		
Catalan		<u> </u>
Screenshot		Go Back Continue

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• Configure the network by entering a hostname and press "Continue".

Odebian	
Configure the network	
Please enter the hostname for this system. The hostname is a single word that identifies your system to the network. If you don't kno hostname should be, consult your network administrator. If you are setting up your own he you can make something up here. <i>Hostname:</i>	w what your ome network,
(debian	
Screenshot Go Back	Continue

• Continue configuring the network by entering a domain name and press "Continue".

Odebian		
Configure the network		
The domain name is the part of your Internet address to the right of your host something that ends in .com, .net, .edu, or .org. If you are setting up a home something up, but make sure you use the same domain name on all your comp	name. It is o network, you outers.	ften can make
Domain name:		
[
*		
Screenshot	Go Back	Continue
sceension	Go Back	

• Enter a root password and press "Continue".

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

• Enter a username to set up a user and press "Continue".



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• Select a username for the new account and press "Continue".

Odebian	
Set up users and passwords	
Select a username for the new account. Your first name is a reasonable choice. The userna start with a lower-case letter, which can be followed by any combination of numbers and m case letters. Username for your account: Tenovo	ame should hore lower-
Screenshot Go Back	Continue

• Enter password for the newly created username and press "Continue".



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• Configure the clock by selecting an appropriate time zone and press "Continue"

Odebian	
Configure the clock	
If the desired time zone is not listed, then please go back to the step "Choose language" and select a country that uses the desired time zone (the country where you live or are located). Select your time zone:	
Eastern	
Central	
Mountain	
Pacific	
nawali	
East Indiana	
Samoa	
Screenshot Go Back Continue	•

• Select "Yes" for forcing UEFI installation and press "Continue".

	Odebian
Partition disks	
This machine's firmwar operating systems alr UEFI mode, it might be	e has started the installer in UEFI mode but it looks like there may be existing eady installed using "BIOS compatibility mode". If you continue to install Debian in difficult to reboot the machine into any BIOS-mode operating systems later.
If you wish to install in systems, you have the operating system, you Force UEFI installation?	UEFI mode and don't care about keeping the ability to boot one of the existing option to force that here. If you wish to keep the option to boot an existing should choose NOT to force UEFI installation here.
○ No	
• Yes	•

• Select a suitable partitioning method and press "Continue".

	Odeb	pian		
artition disks	~			
he installer can guide you through j irefer, you can do it manually. With g ustomise the results. Fyou choose guided partitioning for Partitioning method:	partitioning a disk (juided partitioning an entire disk, you	(using different st you will still have u will next be aske	andard schemes) o a chance later to ro d which disk should	r, if you eview and I be used.
Guided - use entire disk				
Guided - use entire disk and set up l Guided - use entire disk and set up (.VM encrypted LVM			
Manual	k			
creenshot			Go Back	Continue

Select the RAID array partition and press "Continue". ٠



Select a suitable partitioning scheme and press "Continue". •

Odebian
Partition disks
Selected for partitioning:
SCSI3 (0,0,0) (sdc) - AMD-RAID Array 01: 2.0 TB
The disk can be partitioned using one of several different schemes. If you are unsure, choose the first one. Partitioning scheme:
All files in one partition (recommended for new users)
Separate /home partition
Separate /home, /var, and /tmp partitions
Screenshot Go Back Continue

• Select "Finish partitioning and write changes to disk" and press "Continue".

						debla	n			
Partition o	lisks									
This is an o (file syster	overviei n, moui	w of your cu nt point, etc	rrently config .), a free spac	urea ce to	l par cre	rtitions and moun ate partitions, or	t points. Selec a device to in	ct a partition to mo iitialize its partition	dify its settings table.	
Config Config Config Config	ure so ure the ure en ure iS(ftware RAI e Logical V crypted vo CSI volume	D olume Mana lumes s	iger						<
⇒ scsii ((0, 0, 0) #1	(sda) - 31.5	5 GB Specific	ST(ORA					
¬ scsi3 [−]	(0.0.0)	(sdc) - 2.0	TB AMD-RAIL) Ari	av	01				
>			1.0 MB		-	FREE SPACE				=
>	#1		536.9 MB	в	f	ESP				
>	#2		1.8 TB		f	ext4	/			
>	#3		274.7 GB		f	swap	swap			
>			1.0 MB			FREE SPACE				
Undo d	hange	es to partit	ions							
Finish	partiti	oning and	write chang	jes t	o a	ISK				
Screensh	ot	Help						Go Bac	k Contir	nue

• Select "Yes" for writing the changes to disks and press "Continue".

Odebian	
Partition disks	
If you continue, the changes listed below will be written to the disks. Otherwise, you will b further changes manually.	e able to make
The partition tables of the following devices are changed: SCSI3 (0,0,0) (sdc)	
The following partitions are going to be formatted: partition #1 of SCSI3 (0,0,0) (sdc) as ESP partition #2 of SCSI3 (0,0,0) (sdc) as ext4 partition #3 of SCSI3 (0,0,0) (sdc) as swap	
Write the changes to disks?	
• Yes	
Screenshot	Continue

• Select "No" for network mirror and press "Continue".

Odebian		
Configure the package manager		
A network mirror can be used to supplement the software that is included of make newer versions of software available. You are installing from a DVD. Even though the DVD contains a large selectio missing. If you have a reasonably good Internet connection, use of a mirror i install a graphical desktop environment.	n the CD-ROM. T on of packages, s is suggested if y	his may also some may be 'ou plan to
K		
Screenshot	Go Back	Continue

• Select "No/Yes" to participate in the package usage survey and press "Continue".

	Odebian	
Configuring popularity-co	test	
The system may anonym packages on this system first distribution CD.	usly supply the distribution developers with statistics about the most used This information influences decisions such as which packages should go on th	e
If you choose to particip to the distribution devel	e, the automatic submission script will run once every week, sending statistic pers. The collected statistics can be viewed on https://popcon.debian.org/.	s
This choice can be later	odified by running "dpkg-reconfigure popularity-contest".	
Participate in the package	age survey?	
⊖ Yes	▶	
Screenshot	Continu	e

• Choose software to install and press "Continue".

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

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• Select a display manager for Debian 10.03 and press "Continue".

Odebian	
Configuring lightdm	
A display manager is a program that provides graphical login capabilities for the X Window	v System.
Only one display manager can manage a given X server, but multiple display manager pack installed. Please select which display manager should run by default.	ages are
Multiple display managers can run simultaneously if they are configured to manage differe achieve this, configure the display managers accordingly, edit each of their init scripts in / disable the check for a default display manager.	ent servers; to etc/init.d, and
Default display manager:	
gdm3	
lightdm	
sddm	
▶	
•	
Screenshot	Continue

• Remove the installation media and select "Continue" to restart the system.

Odebian	
Finish the installation	
Installation complete Installation is complete, so it is time to boot into your new system. Make sure to remove the installation media, so that you boot into the new system rather than restarting the installation.	
₩	
Screenshot Go Back	

• Select "*Debian GNU/Linux" and press enter.

		GNU GRUB version 2.02+dfsg1-20
⊭Debian GNU/Linux Huvanceu uprions tu System setup	r Debian GNU/Linux	

• Enter user credentials to log in and select "Sign In".

knows Paramet IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
(^O debian ¹⁰

Section 4 – RAIDXpert2 Management Application

Optional: AMD has a RAIDXpert2 Management Application for AMD RAID arrays. Please refer to the following instructions and screenshots for installing the AMD management utility on ThinkStation P620.

- Download the Linux AMD RAIDXpert2 Management Application from the Lenovo support site directly onto the Debian 10.03 desktop.
- Open a terminal window and browse to the location where the driver package is stored.



• Extract the contents of the *.tgz file using the following command: *"tar xzvf 9.3.0-00180_linux_raidxpert2.tgz -C /opt"*



 Change directory path to where the package was extracted to from above: "cd /opt/ raidxpert2/bin"

```
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_R
HEL_Ubuntu_Linux_930_00180# cd /opt/raidxpert2//bin/
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin# ls
RAIDXpert2 rcadm
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin#
```

 To launch the AMD RAIDXpert2 Management Application, run the following command:
 "./RAIDXpert2 &"

```
root@lenovo-ThinkStation-P620:/home/lenovo/Desktop/L5RAU02US14WSUSI/RAIDXpert2_R
HEL_Ubuntu_Linux_930_00180# cd /opt/raidxpert2//bin/
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin# ls
RAIDXpert2 rcadm
root@lenovo-ThinkStation-P620:/opt/raidxpert2/bin# ./RAIDXpert2 &
```

• RAIDXpert2 Management Application.

						MDYpert2						
File Array Dick View Help						AlbApertz						
Line Aritay Disk Diew Liety ✓ Elenovo-ThinkStation-P620 ✓ ■ Array 1 ✓ ■ RAID0 Ž Disk 0 1 (SAMSUNG MZVLB)	Disk 0 1 1 1	State Online Online	Type Po Disk N Disk N	ort Type VMe Gen3 x4 VMe Gen3 x4	Capacity 1.0TB 1.0TB	Free Space 0.0MB 0.0MB	Largest Free 0.0MB 0.0MB	Global Spare No No	Uses 1 1	Model Number SAMSUNG MZVL SAMSUNG MZVL	B1T0HALR-000L7 B1T0HALR-000L7	Serial Number S3TPNF0K30 S3TPNE0K10
ي Disk 1 1 (SAMSUNG MZVLB	110											
	Device Array	OS Na 1 /dev/s	me Systa ida Yes	em Partitic	n Array	Name Ty E RJ	pe Total Capacity	r State NORMAL	Task NOT ACTIVI	Task State NOT ACTIVE	Progress Pri 0.00% 9	Scan Ca No Ri
Date Event Pr	iority ery Low	Text - Initialized	messages sp	ace, starting n	nessage logg	pide 0 toto					0.02.00	

Section 5 – Installing the Aquantia LAN Driver

The onboard Aquantia LAN driver is not native to Debian 10.03 on Lenovo P620 system. In order to make your LAN working, follow the steps below.

 Mount the Debian media key to the system and comment all lines in the source.list file and add the highlighted comment using an editor of your choice and save the changes.



• Update the package list with the "apt-get update" command.



Install the necessary packages by using the following command.



• Navigate to the directory where the Aquantia LAN driver is stored and unzip it.





• Untar the "atlantic.tar.gz" file by running the following command.

```
root@lenovo:/home/lenovo/Downloads# tar zxf atlantic.tar.gz
root@lenovo:/home/lenovo/Downloads# ls
atlantic.tar.gz L6ETN02US14WSUSI.zip Linux README.txt version.txt
root@lenovo:/home/lenovo/Downloads#
```

• Compile the modules inside the "Linux" folder using "make".

	tenovo@tenovo: ~									
File Edit View	/ Search Termina	l Help								
root@lenovo:// root@lenovo://	home/lenovo/Down home/lenovo/Down	nloads# cd Linux nloads/Linux# ls	K/ 5							
aq_cfg.h	aq_filters.c	aq_main.h	aq_ptp.h	aq_tsn.c	hw_atl2					
aq_common.h	aq_filters.h	aq_nic.c	aq_ring.c	aq_tsn.h	Kconfig					
aq_compat.c	aq_hw.h	aq_nic.h	aq_ring.h	aq_utils.h	macsec					
aq_compat.h	aq_hw_utils.c	aq_pci_func.c	aq_rss.h	aq_vec.c	Makefile					
aq_drvinfo.c	aq_hw_utils.h	aq_pci_func.h	aq_sysfs.c	aq_vec.h	README.txt					
aq_drvinfo.h	aq_macsec.c	aq_phy.c	aq_sysfs.h	build-deb.sh	release_notes.txt					
aq_ethtool.c	aq macsec.h	aq phy.h	aq trace.c	dkms.sh	rpm-src.spec					
aq_ethtool.h	aq_main.c	aq_ptp.c	aq_trace.h	hw_atl	ver.h					
root@lenovo:/	home/lenovo/Down	nloads/Linux# ma	ake							

• Build and install the driver using dkms.sh script. In case of an error, run the command "export PATH=\$PATH:/usr/sbin" and try running the script again.

						lenovo@lenovo: ~
File	Edit	View	Search	Terminal	Help	
root(leno	vo:/ho	ome/lend	ovo/Downl	oads/Linux#	export PATH=\$PATH:/usr/sbin
root@	leno	vo:/ho	ome/len	ovo/Down]	.oads/Linux#	≠ ./dkms.sh install

 Load the dependencies and the module using the following list of commandsmodprobe ptp modprobe crc_itu_t insmod atlantic.ko

lenovo@lenovo: ~

File Edit View Search Terminal Help
root@lenovo:/home/lenovo/Downloads/Linux# modprobe ptp
root@lenovo:/home/lenovo/Downloads/Linux# modprobe crc_itu_t
root@lenovo:/home/lenovo/Downloads/Linux# insmod atlantic.ko
insmod: ERROR: could not insert module atlantic.ko: File exists
root@lenovo:/home/lenovo/Downloads/Linux#

• Unload and install the driver in the system using "rmmod atlantic" and "make && make install" commands. Type "y" for yes for attempting initramfs update.

						lenovo@lenovo: ~		
File	Edit	View	Search	Terminal	Help			
root@ root@ nake nake MOU nake atlar CAUTJ Atten	elenov -j4 1]: ldino POST 1]: 1]: 1]: tic. ON! pt i	vo:/ho -C /li Enteri g modu 1 moo Leavir Enteri ko is Updati nitram	ome/lend ome/lend ib/modul ing dired ules, st dules ing dired ing dired ing init ing init	ovo/Downl ovo/Downl Les/4.19. ectory '/ tage 2. ctory '/u ectory '/ tramfs. tramfs is ate? [yN]	oads/Linux# oads/Linux# 0-9-amd64/bu usr/src/linu usr/src/linu home/lenovo/ potentially y	rmmod atlantic make && make in ild M="/home/le x-headers-4.19.0 Downloads/Linux dangerous.	stall novo/Downloads/Linu 0-9-amd64' -9-amd64' '	x" modules

• Verify if the LAN driver is present in /lib/modules/`uname -r` atlantic.ko

lenovo@lenovo: ~	
File Edit View Search Terminal Help	
<pre>root@lenovo:/home/lenovo/Downloads/Linux# find /lib/modules/4.19.0-9-amd64/ -name atlantic.ko /lib/modules/4.19.0-9-amd64/kernel/drivers/net/ethernet/aquantia/atlantic/atlantic.ko /lib/modules/4.19.0-9-amd64/updates/dkms/atlantic.ko /lib/modules/4.19.0-9-amd64/updates/drivers/net/ethernet/aquantia/atlantic/atlantic.ko root@lenovo:/home/lenovo/Downloads/Linux#</pre>	

• Reboot the system or run the command "modprobe atlantic" and verify if the LAN is working.



• Run the command "ip addr" to check the IP from the terminal window.

lenovo@lenovo: ~	×
File Edit View Search Terminal Help	
<pre>root@lenovo:/home/lenovo# ip addr 1: lo: <loopback,up,lower_up> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000 link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00 inet 127.0.0.1/8 scope host lo valid_lft forever preferred_lft forever inet6 ::1/128 scope host valid_lft forever preferred_lft forever valid_lft forever preferred_lft forever valid_lft forever preferred_lft forever valid_lft forever preferred_lft forever valid_lft forever preferred_lft forever</loopback,up,lower_up></pre>	
4: enp34s0: <nu-carrier,bruadcasi,muliicasi,up> mtu 1500 qdisc mq state DUWN group default que 1000 lick(other 00.17.65.00.27.55 brd ff.ff.ff.ff.ff.ff.</nu-carrier,bruadcasi,muliicasi,up>	in .
<pre>link/ether 00:17:b6:00:a7:55 brd ff:ff:ff:ff:ff:ff 5: enpls0: <broadcast,multicast,up,lower_up> mtu 1500 qdisc mq state UP group default qlen 100 link/ether 00:17.b0:00:00 brd ff:ff:ff:ff:ff:ff inet 192.168.1.48/24 brd 192.168.1.255 scope global dynamic noprefixroute enpls0 valid lft 259170ser preferred_lft 259170sec inet6 2606:a000:111a:c656:913/128 scope global dynamic noprefixroute valid_lft 604769sec preferred_lft 604769sec inet6 2606:a000:111a:c656:903:b3:81ba:cad1/64 scope global temporary dynamic valid_lft 604769sec preferred_lft 85963sec inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute valid_lft 604769sec preferred_lft 604791sec inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute valid_lft 604791sec preferred_lft 604791sec inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute valid_lft 6047091sec preferred_lft 6047091sec inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute valid_lft 6047091sec preferred_lft 6047091sec inet6 2606:a000:111a:c656:217:b6ff:fe00:0/64 scope global dynamic mngtmpaddr noprefixroute valid_lft 6047091sec preferred_lft 6047091sec inet6 fe80::217:b6ff:fe00:0/64 scope link noprefixroute valid_lft forever preferred_lft forever root@lenovo:/home/lenovo#</broadcast,multicast,up,lower_up></pre>	ž)0

Section 6 – 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@lenovo: ~	×
File	Edit	View	Search	Terminal	Help	
<mark>lenov</mark> Passv root(vord: alenov	10 vo: ~ /o:/ho	\$ su me/lenc)vo# gedi	t /etc/modprobe.d/blacklist.conf	

lenovo@debian: ~	× Open 🕶 🖪	*blacklist.conf	Save = ×
File Edit View Search Terminal Help	blacklist nouveau	Perconnergi enera	
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 The connection is closed	to dconf:		
(gedit:3104): dconf-WAANING **: 18:88:35.082: failed to commit changes 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)	to dconf:		
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes The connection is closed	to dconf:		
(gedit:3104): dconf-WARNING **: 18:00:35.202: failed to commit changes The connection is closed	to dconf:		
(gedit:3104): dconf-WARNING **: 18:08:35.202: failed to commit changes The connection is closed \Box	to dconf:		
	\times		
		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.



• Install build-essential and linux-headers* packages.



• Browse into the directory where the Nvidia driver is stored and make the Nvidia installer an executable by the command- chmod +x NVIDIA-Linux-x86-64-*

Once done, 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.



• Select Install and overwrite existing files.



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



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

NVIDIA Ro	celerated Graphics Driver for Linux-x86_64 (440.64)
Your X configuration file has been successfully updated.	Installation of the NVIDIA Accelerated Graphics Driver for Linux-x86_64 (version: 440.64) is now
complete.	
NVIDIA Software Installer for Unix/Linux	uuu.nvidia.com

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

NVID	IA-SMI	440.1	00	Driver	Version:	440.	100	CUDA	A Versi	on: 10.2	2
GPU Fan	Name Temp	Perf	Persis Pwr:Us	tence-M age/Cap	Bus-Id	Memo	Disp.A ry–Usage	Vo	⊃latile PU−Util	Uncorr. Comput	ECC
0 42%	Quadr 50C	o P620 P0	N/A	Off / N/A	0000000 0M	0:61: iB /	00.0 Off 1997MiB	 -+	 2% 	Def	N/A ault
Proc GPU	esses:	PID	 Туре	Process	name					GPU Me Usage	emory

• Reboot the system.



Section 7 – Revision History

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