Red Hat Enterprise Linux 8 Installation

Lenovo ThinkStation P620



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Section 1 - BIOS Setup & Preinstallation Steps

The first step before installing Linux is to make sure the system BIOS is setup correctly. Follow the steps below to ensure a few BIOS settings are set appropriately.

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



• On the main start menu within BIOS setup, select the "Security" option.



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

ThinkStation	If "No" is selected, the Power-On Password will not be required when system restarts.	L	^
T IIIIINVLULIVII.	BIOS Password At Boot Device List If Yes and a supervisor password is set, the user will be prompted for a password when F12 is pressed during POST.	No	~
Start Menu	Smart USB Protection Smart USB Protection could block copying data from the computer to the	Disabled	~
슈 Main 슈 Devices	USB storage device in Windows Read Only mode: the user can copy data from USB storage device to the Computer but cannot copy data from the computer to USB storage device No Access mode: the user cannot use USB storage device in Windows		
よ 来 Advanced			
Power Security	> Hard Disk Password Configure hard disk password.		1
🚣 Startup [→ Exit	> TCG Feature Setup Contains TCG security features.		
	 System Event Log View or clear the system event log. 		
Lenovo.	 Secure Boot Secure Boot flow control. Secure Boot is possible only if System runs in User Mode 		Ĵ
F1 Help ESC Exit	↑↓ Select Item +/- Change Values ♦> Select Menu Enter Select > Sub-Menu	F9 Setup Defaults F10 Save and Exit	

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• Set the "Secure Boot" drop-down option to "Disabled".

ThinkStation	< ←	Î			
	Secure Boot				
Chart Marrie	System Mode Deployed Mode				
Start Menu		_1			
🛱 Main	Secure Boot IEnabled Enables Secure Boot.BIOS will prevent un-authorised OS be]			
쇼 Devices	loaded. [Disabled] Disables Secure Boot.				
🛠 Advanced	· · · · · · · · · · · · · · · · · · ·	-			
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	Ť			
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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• Press the function F10 key to "Save & Exit" the BIOS setup menu and select "Yes" on the pop-up window that'll appear.

ThinkStation	← Secure Boot	~
Start Menu	System Mode Deployed Mode	
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 Power Security Startup 	Restore Fa Restore Fat S Reset Plat	
[→ Exit	Reset to set Yes No Exit Deplo Transition between Deployment and User Modes	
Lenovo.	> Key Management	~
F1 Help ESC Exit	↑↓ Select Item +/- Change Values F9 Setup Defaults ◆→ Select Menu Enter Select > Sub-Menu F10 Save and Exit	

Section 2 – Installing Red Hat Enterprise Linux 8

Please refer to the following instructions and screenshots on how to install RedHat Enterprise Linux (RHEL) 8 on the Lenovo ThinkStation P620.

- Insert the RHEL 8 installation media either through USB or CD/DVD.
- Power on the system and press the function F12 key when the Lenovo splash screen appears.

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• Select the Linux bootable installation media from the Startup Device Menu.



• Select the "Install Red Hat Enterprise Linux 8.2" option from the GRUB boot menu and press enter.



• The Red Hat Enterprise Linux Welcome Screen should appear. Select the appropriate language and "Continue".

WELCOME TO RED HAT ENTERPRISE LINUX 8.2. What language would you like to use during the installation process? English Afrikaans সম্পর্ট বন্ধার্থ অসমিরা অসমিরা উল্লেচ্যুৎক্ষের Boranşexa Boranşex বাংলা উর্জ্ব Bosanski Català	English Afrikaans Arnhanc Arabic Assamese Asturian Belarusian Belarusian Belarusian Belarusian Bangla Tibetan Bosnian Catalan Catalan	English (United States) English (United Kingdom) English (United Kingdom) English (Kinstrola) English (Kinstrola) English (Iverand) English (Iverand) English (Iverand) English (Iverand) English (Nigera) English (Flong Korg SAR China) English (Flong Korg SAR China) English (Engapore) English (South Africa)	
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চন্দেবচুকেন বাংলা উদ্বেত্ব Bosanski Català	Bulgarian Bangla Tibetan Bosnian Catalan ♥ Caech	English (Nigeria) English (Hong Kong SAR China) English (Philippines) English (Singapore) English (South Africa)	
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¥ξηφ Bosinski Čeština Čymraeg Dansk Deutsch Eλληνικκά	Tibetan Bosnian Catalan Czech	English (Philippines) English (Singapore) English (South Africa)	
Bosanski Čatalå Čeština Čymrang Dansk Deutsch EXhypuská	Bosnian Catalan Czech	English (Singapore) English (South Africa)	
Català Cettina Cymraeg Dansk Deutsch EXAryuxá	Catalan Czech	English (South Africa)	
Čeština Cymraeg Dansk Deutsch Eλληνικά	Czech		
Cymraeg Dansk Deutsch ENNywscá		English (Zambia)	
Dansk Deutsch Ελληγικά	Welsh	English (Zimbabwe)	
Deutsch Ελληνικά	Danish	English (Antiqua & Barbuda)	
Ελληνικά	German	English (Hingda a Barbada)	
	Greek		
Español	Spanish		
Eesti	Estonian		
Euskara	Basque		
فارسب	Persian		
Suomi	Finnish		
Filipino	Filipino		
Français	French		
Furlan	Friulian		
	a		

• Adjust the "Keyboard", "Language Support", and "Time & Date" accordingly by selecting each one. Or, leave the default settings.



- INSTALLATION SUMMARY RED HAT ENTERPRISE LINUX 8.2 INSTALLATION Red Hat 20 m Helpl LOCALIZATION SOFTWARE SYSTEM English (US) Installation Source Installation Destination Language Support Software Selection Connect to Red Hat Time & Date At connected Security Policy k Ouit Begin Installation
 We won't touch your disks until you click 'Begin Installation'. Please complete items marked with this icon before continuing to the next ste
- Select the "Software Selection" and choose the type of software to install.

• Select the type of "Base Environment" as well as each "Add-Ons" to install. In this example, "Workstation" was selected for the "Base Environment" and all "Add-Ons" were selected.



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• Select "Installation Destination".



• Select the device on where to install the operating system. In this example, the first NVMe drive was selected.

For AMD RAID arrays, see Section 3 below.

Done ON DESTINATION				RED HAT ENTERPRISE LINUX 8.2 INSTALLATION छा us
Device Selection Select the device(s) you'd like to install to. They will be left un	touched until you click on the main menu's "Begin Installation" but	tton.		
Local Standard Disks	052 87 GP	02151.68	20.99.618	
533.87 dib			29.68 018	
SAMSUNG MZVLB1T0HALR-000L71.0025388381b32fe3 nvme0n1 / 953.87 GiB free	SAMSUNG MZVLB1T0HALR-000L7 I.0025388181005880 nvme1n1 / 953.87 GiB free	ATA ST1000DM003-1SB1 5000c500cfb9636c sda / 931.51 GiB free	Samsung Flash Drive sdb / 992.5 KiB free	
Specialized & Network Disks				Disks left unselected here will not be touched.
Add a disk				
Storage Configuration				Disks left unselected here will not be touched.
Automatic Custom In vould like to make additional space available. Encryption				
Encrypt my data. You'll set a passphrase next.				
	R.			
Full disk summary and boot leader				1 disk selected: 953.87 GiB capacity: 953.87 GiB free <u>Refresh</u>

• For storage devices with previous partitions created, select "Reclaim space".

INSTALLATION OPTIONS
Your current <u>Red Hat Enterprise Linux software selection</u> requires 20.07 GIB of available space, including 4.49 GIB for software and 15.58 GIB for swap space. The disks you've selected have the following amounts of free space:
1.3 MiB Free space available for use.
466.92 GiB Free space unavailable but reclaimable from existing partitions.
You don't have enough space available to install Red Hat Enterprise Linux. You can shrink or remove existing partitions via our guided reclaim space tool, or you can adjust your partitions on your own in the custom partitioning interface.
Cancel & add more disks

• Select "Delete all" to delete all the previously created partitions or select each partition to delete and select the "Delete" option. When done, select "Reclaim space" button at the bottom.

	RECLAIM DISK SPACE You can remove existing file systems you no longer need to free up space for this installation. Removing a file system will permanently delete all of the data it contains.							
L	There is also free space available in pre-existing file systems. While it's risky and we recommend you back up your data first, you can recover that free disk space and make it available for this installation below.							
ł	Disk	c .	Name	File System	Reclaimable Space	Action		
L	▼ 4	76.9 GIB SAMSUNG MZVLB512HBJQ-000L7	nvme0n1		467.42 GIB total	Preserve		
L	\vdash	/boot/efi (Ubuntu Linux 18.04 for x86_64)	nvme0n1p1	EFI System Partition	Not resizeable	Preserve		
L	\vdash	/ (Ubuntu Linux 18.04 for x86_64)	nvme0n1p2	ext4	466.9 GIB of 476.4 GIB	Preserve		
L	_	Free space			1.3 M/B			
L								
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L								
L								
L								
l	Pre	eserve Delete Shrink					Delete al	
L	1 disi	k; 467.42 GIB reclaimable space (in file system	s)					
L							otal selected space to reclain	: 0
L							installation requires a total of Statigib for system d	ma.
							Cancel Reclaim space	

• Select "Begin Installation" at the bottom right.



• Select "Root Password".

- Red Hat	CONFIGURATION		RED HAT ENTERPRISE LINUX 8.2 INSTA	LLATION
Red Hat		USER SETTINGS Root Password is not set Root password is not set User Creation Forever will be conted	E3 4	Helpi
	Creating of s on / dev/mapper/theit-borne	•		
	Passe complete items marked with this icon before continuing to the next step.			

Lenovo

• Enter a root password in both of the boxes below and select "Done" in the upper left.

POOTPASSWORD			RED HAT ENTERPRISE LINUX 8.2 INSTALLATION
Done			🖽 us 🛛 Helpi
	The root account is used for adm	inistering the system. Enter a password for the root user.	
	Root Password:		
		Empty	
	Confirm:		
		k	

• Select "User Creation".

	CONFIGURATION		RED HAT ENTERPRISE LINUX 8 2 INSTA	ILATION
Red Hat			E us	Helpi
de la constance				
1 1				
		USER SETTINGS		
		Root Password Root password is set		
		User Creation Nouser will be created		
		k		
	Downloading packages			

Fill in the appropriate boxes below and select "Done" in the upper left. •



Once the installation completes, select "Reboot" at the bottom right. ٠

Red Hat	CONFIGURATION		RED HAT ENTERPRISE LINUX 8.2 INSTALLATION BEI 16
		USER SETTINGS	
		User Creation Advantage with creared	
		k	
	Completel		Red Hat Enterprise Linux is now successfully installed and makey for you to used Go alread and reboot in a star used and Different
	△ Use of this product is subject to the license agreement found at /usr/share/redhat-release/EULA		

Select the "License Information" box. •



Select the box at the bottom left of the "License Agreement" page and "Done" in the upper left. •

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3. United Warrary Except as specifically stated in this Section 3, a separate systement with Red Hat, or a locines for a particular component, to the maximum entent permitted under applicable law, the Programs and the components are provided and locened "as the "bit warrarts for a generation" composers. The sequence of these for a particular composers, to the maximum entent permitted under applicable law, the Programs and the components are provided will be free form divers in materials and mandatum under moral use for a particular composers, the the maximum entent permitted under applicable law, the Programs and the components are provided will be free form divers in materials and mandatum under moral use for a particular composers, the the maximum entent permitted under applicable law, the Programs and the components are provided will be free form divers in materials and mandatum under moral use for a particular composers, the the averants that the inclusion contained the the Programs and the components are provided will be free form divers in materials and mandatum under moral use for a particular companying documentation, or comply with regulatory requirements. This warranty extends only to the party that purchases subscription services for the Programs from Red Hat and for statificates are also for a diverse document. This warranty extends only to the party that purchases subscription services for the Programs from Red Hat and for statificates are also for a diverse document and the services of the Programs from Red Hat and for statificates and Likelity. To the maximum entent permitted by applicable law, your exclusive immedy under this ELIA is to return any defective media within 30 days of dokinger, and to be maximum entent permitted under applicable law, under no circumstances will Red Hat at allowing, even file Hat Hat at Sequence and Likelitates and Likel	2. Intelectual Poperty Bights. The Pograms and each of their components are sovned by Red Hat and other licenson and are protected under copyright law and under other laws as applicable. Thile to the Programs and any component, or to any copy, mor or merged portion hult remain with field Hat and other licensons, subject to the applicable license. The TRed Hat' trademak and the "Shadowman" point are reported trademak to Red Hat in the US. and other countries. This EUA does not permit you to the Programs or the organisms of the Chat's subdamark. The copy has been modeling's commercial redstribution of the Programs. The Program Strate write asystemer with Red Hat and write commercial redstribution, or 00 you remove and replace all occurrences of Red Hat trademarks. Medifications to the software may comport the Programs. The software that programs or the Operator framework and the Trademarks. Medifications to the software may comport the Programs. The Stratemark and the Trademarks and the Trademarks and the Trademarks.	fification, distribute 1g such 1e
4. Limitation of Remedies and Liability. To the maximum extent permitted by applicable law, your exclusive remedy under this DLA is to return any defective media within 30 days of dolvery along with a copy of your payment receipt and Red Hat, at its option, will replace to refurd the money you paid for the media. To the maximum extent permitted under applicable law, under no incumstances will Red Hat, at Red Hat, and Hat, at Red Hat,	3. Unrel Warrary, Except as specifically stated in this Section 3, a separate agreement with Red Har, or a license for a particular component, to the maximum extent permitted under applicable law, the Programs and the components are provided and lice Is "without warrary of any lad, appressed or impled, including the impled warranties of merchanizability, non-infragment or fitness for a particular propose. Bed Har warrant stat the media on which the Programs and the components are provided will be from divides in marketis and mandature under normal user for a pandor of 3 pandor 10 pandor	nsed "as e free n of the Red Hat
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I accept the Kenne agreement.	I acopt the Kenne agreement.	

• Select "FINISH CONFIGURATION".

de Red Hat	INITIAL SETUP			RED HAT ENTERPRISE	LINUX 8.2 (OOTPA)
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		LICENSING	EVETEM		
		DCENSING	STOLEM		
		License Information	Subscription Manager Transient in aurorityna regiones		
			¥		
	оли			Fit	NISH CONFIGURATION

• Log in to the Linux Desktop using the login credentials created above.



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• Red Hat Enterprise Linux 8.x Desktop screen.



Section 3 – RAID Array Installation

Please refer to the following instructions and screenshots on how to install RedHat Enterprise Linux (RHEL) 8 utilizing RAID arrays on the Lenovo ThinkStation P620.

<u>Note</u>: 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 put the direct *.iso file onto the root of a USB flash drive.
- Insert the RHEL 8 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 Linux bootable installation media from the Startup Device Menu.



• Select the "Install Red Hat Enterprise Linux 8.2" option from the GRUB boot menu, and press 'e'.



- Lenovo
- Add the following lines to the end of the Linux kernel command parameter and press CTRL-X.

"inst.dd modprobe.blacklist=ahci modprobe.blacklist=nvme nomodeseť"



• At the "Driver Disk Device Selection" menu, insert the USB flash drive with the Linux AMD RAID driver iso file into a USB port of the system. Press "r" to refresh the menu options.



• Enter the number for the USB flash drive containing the Linux AMD RAID driver.

In this example, number two was the option for the USB device with the driver. Therefore, the user would input "2" followed by 'Enter'.

(Page	: 1 of	1)	Driver	disk	device	selection	
	DEVIC	E T	YPE	LABI	EL		UUID
1) s	sda 1	U	fat	RHEI	2-8-2-0-	-	B4EE-306F
2) s	sdb1	U	fat				2A87-80EC
# to	selec	:t, 'ı	r'-ref	resh,	or 'c'-	-continue:	2_

• Press "1" for the number next to the correct iso file.

(Page 1 of 1) Choose driver disk ISO file 1) /media/DD-2/dd-rcraid-RHEL8-4.18.0-193.e18.x86 64.iso # to select, or 'c'-continue: 1_

• Press "1" again to toggle the section for the *.rpm file.

(Page 1 of 1) Select drivers to install 1) [] /media/DD-3/rpms/x86_64/kmod-rcraid-9.3.0-4.18.0.193.el8.x86_64.x86_64.rpm # to toggle selection, or 'c'-continue: 1_ • Press "C" to continue loading the driver.



• Press "C" again to continue with the installation.

(Page 1 of 1)) Driver	disk device selection	
<i>DEVICE</i>	TYPE	LABEL	UUID
1) sda1	ufat	RHEL-8-2-0-	B4EE-306F
2) sdb1	ufat		2A87-80EC
<pre># to select,</pre>	'r'-refr	esh, or 'c'-continue:	С

• The Red Hat Enterprise Linux Welcome Screen should appear. Select the appropriate language and "Continue".

WELCOME TO RED HAT ENTERPRIS	E LINUX 8.2.		
What language would you like to use during the in	stallation process?		
English	English	English (United States)	
Afrikaans	Afrikaans	English (United Kingdom)	
አማርኛ	Amharic	English (India)	
العربية	Arabic	English (Austraua)	
অসমীয়া	Assamese	English (Denmark)	
Asturianu	Asturian	English (ireland)	
Беларуская	Belarusian	English (New Zealand)	
Български	Bulgarian	English (Nigeria)	
বাংলা	Bangla	English (Hong Kong SAR China)	
4141	Tibetan	English (Philippines)	
Bosanski	Bosnian	English (Singapore)	
Català	Catalan	English (South Africa)	
Čeština	Czech	English (Zambia)	
Cymraeg	Welsh	English (Zimbabwe)	
Dansk	Danish	English (Botswana)	
Deutsch	German	English (Antigua & Barboua)	
Ελληνικά	Greek		
Español	Snanish		
Eesti	Estonian		
Fuskara	Basque		
فارسب	Persian		
Suomi	Finnish		
Filiping	Filinino		
Français	Franch		
Eirlan	Frielan		
	rnaan]	
	a		

• Adjust the "Keyboard", "Language Support", and "Time & Date" accordingly by selecting each one. Or, leave the default settings.



• Select the "Software Selection" and choose the type of software to install.



- Lenovo
- Select the type of "Base Environment" as well as each "Add-Ons" to install. In this example, "Workstation" was selected for the "Base Environment" and all "Add-Ons" were selected.

Demo	RED HAT ENTERPRISE LINUX 8.2 INSTALLATION 편제 @
Base Environment Storer with GU An encyrated anyto-manage saver. Image: Control of the same of the system of the system of the same of	Additional software for Selected Environment

• Select "Installation Destination".

Red Hat	INSTALLATION SUMMARY				RED HAT ENTERPRISE LINU; 题 us	X 8.2 INSTALLATION
		LOCALIZATION Employed Employed (30) Language Support Employed (Samed Samed) Time & Date Associabilities Task Interace	SOFTWARE Installation Source Led meds Software Selection Workstoon	SYSTEM Mathematical Mathemat		
	Perso consider liters marked with this icon before continuine to the	- per ten		Security Policy hopedia societ	Duit Ouit We won't teach your disks until	Begin Installation proc cick Bergin Installation

• Select the "AMD-RAID Array 01" under "Local Standard Disks", "Custom" under the "Storage Configuration", and "Done" in the upper left corner.

		RED HAT ENTERPRISE LINUX 8.2 INSTALLATION
Device Selection		
Select the device(s) you'd	l like to install to. They will be left untouched until you click on the	e main menu's "Begin Installation" button.
Local Standard Disks		
29.88 GiB	1.86 TiB	
Samsung Flash Drive sda / 992.5 KiB free	AMD-RAID Array 01 600c0ff00000000000000359aac1f705d sdc / 1.86 TiB free	
		Disks left unselected here will not be touched.
Specialized & Network Disks		
Add a disk		
		Disks left unselected here will not be touched.
Storage Configuration	Lustom	
Encryption	<u> </u>	
Encrypt my data. You'll set	a passphrase next.	
Full disk summary and boot load	ler	1 disk selected; 1.86 TiB capacity; 1.86 TiB free Refresh

• Select the link "Click here to create them automatically".



- Select each of the following partitions and change the file system type from "xfs" to "ext4".
 - DATA -> /home
 - SYSTEM -> /boot
 - SYSTEM -> /rhel-root

<u>Note</u>: When you change the File System for each partition, you must select the "Update Settings" option for each one.

When finished, select the "Done" option in the upper left corner.

MANUAL PARTITIONING		RED	HAT ENTERPRISE LINUX 8.2 INSTALL	ATION
Done		(B)	us	Help!
✓ New Red Hat Enterprise Linux 8.2 Instal DATA	lation	rhel-home		
/home thel-home	1.81 TiB >	Mount Point: /home	Device(s): AMD-RAID Array 01 600c0ff000000000000359aac1f	705d
SYSTEM /boot/efi sdc1	600 MiB	Desired Capacity: 1.81 TIB	(sdc) Modify	
/boot sdc2	1024 MiB	Device Type:	Volume Group:	
/ rhei-root	50 GiB	LVM - En	crypt rhel (0 B free	e) 🖛
swap rhel-swap	4 GiB	File System:	Modify	
	k -	Label:	Name: home	
			Update Settin	ngs
+ - C		1	Note: The settings you make on this screen w be applied until you click on the main menu's ' Installation' bu	ill not 'Begin utton
AVAILABLE SPACE 1.97 MiB TOTAL SPACE 1.86 TiB				
1 storage device selected			Re	eset All

• Select "Accept Changes".

SUMMARY OF CHANGES

Your customizations will result in the following changes taking effect after you return to the main menu and begin installation:					
Order	Action	Туре	Devi	e	Μοι
1	Destroy Format	Unknown	AMD-	RAID Array 01 600c0ff0000000000000359aac1f705d (sdc)	1
2	Create Format	partition table (GPT)	AMD-	RAID Array 01 600c0ff0000000000000359aac1f705d (sdc)	- 1
3	Create Device	partition	sdc1	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	- 1
4	Create Format	EFI System Partition	sdc1	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	/boc
5	Create Device	partition	sdc2	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	- 1
6	Create Device	partition	sdc3	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	- 1
7	Create Format	ext4	sdc3	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	/boc
8	Create Format	physical volume (LVM)	sdc2	on AMD-RAID Array 01 600c0ff0000000000000359aac1f705d	
9	Create Device	lvmvg	rhel		- 1
10	Create Device	lvmlv	rhel-s	wap	ц.
11	Create Format	swap	rhel-s	wap	
12	Create Device	lvmlv	rhel-h	ome	
				Cancel & Return to Custom Partitioning Accept Change	25

• Select "Begin Installation".

Ced Hat	INSTALLATION SUMMARY	RED H us	HAT ENTERPRISE LINUX 8.2 INSTALLATION
	LOCALIZATION	SOFTWARE	SYSTEM
	Keyboard English (US)	Installation Source Local media	Installation Destination Custom partitioning selected
	English (United States)	Software Selection Workstation	Connect to Red Hat Not registered.
	S Time & Date Americas/New York timezone		KDUMP Kdump is enabled
			Network & Host Name
		b -	Security Policy No profile selected
		We	Quit Begin Installation won't touch your disks until you cuck Begin installation.
	A Warning: Processor has Simultaneous Multithrea	ading (SMT) enabled. <u>Click for details.</u>	

• Select "Root Password".

Red Hat	CONFIGURATION		RED HAT ENTERPRISE LINUX 8.2 INST	ALLATION
			翻 us	Helpi
\sim				
		USER SETTINGS		
		Root Password		
		Root password is not set		
		User Creation No user will be created		
		•		
	Creation vfs on (Asv/manner/rhol-horma			
	• • • • • • • • • • • • • • • • • • •			
	Please complete items marked with this icon before continuing to the next step.			

• Enter a root password in both boxes below and select "Done" in the upper left.

POOT PASSWORD			RED HAT ENTERPRISE LINUX 8.2 INSTALLATION
Done			🖽 us Helpi
	The root account is used for admin	nistering the system. Enter a password for the root user.	
	Root Password:	1	
		Empty	
	Confirm:		
		~	

• Select "User Creation".

Red Hat	CONFIGURATION	RED HAT ENTERPRISE LINUX 8.2 INSTALLATION
Red Hat	CONFIGURATION USER SETTINGS	RED HAT ENTERPRISE LINUX 8.2 INSTALLATION ES o
	Downloading packages	

Fill in the appropriate boxes below and select "Done" in the upper left. •



Once the installation completes, select the "Reboot" option. •

	CONFIGURATION			RED HAT ENTERPRISE LINUX 8.2 INSTALL	ATION
Red Hat		USER SETTINGS			Help .
			k		
	Completel		1	Red Hat Enterprise Linux is now successfully installed and ready for y Go ahead and re	ou to use! Reboot
	△ Use of this product is subject to the license agreement found at /usr/share/redhat-release/EULA				

• Select the "License Information" box.



• Select the box at the bottom left of the "License Agreement" page and "Done" in the upper left.

License Agreement:			
END USER LICENSE AGREEMENT RED HAT(I	(R) ENTERPRISE LINUX(R) AND RED HAT APPLICATIONS		
This end user license agreement ("EULA") ge organization (the "Programs"), regardless of	overse the use of any of the versions of Red Hat Enterprise Linux, certain o the delivery mechanism.	ther Red Hat software applications that include or refer to this licen	e, and any related updates, source code, appearance, structure and
 License Grant. Subject to the following te for each software component is located in it exception of (a) ortain binary only firmware not limit your rights under, or grant you right 	erms, Red Hat, Inc. ("Red Hat.") grants to you a parpetual, worldwide loonse he software component's source code and permits you to run, copy, modify components and (b) the images identified in Section 3 below. The license r hts that supersede, the license terms of any particular component.	to the Programs (most of which include multiple software compone and redistribute the software component (subject to certain obligg gifts for the binary only firmware components are located with the	nt) pursuant to the GNU General Public License v2. The license agreem tions in some cases), both in source code and binary code forms, with the components themselves. This EULA pertains solely to the Programs and
 Intellectual Property Rights. The Program or merged portion shall remain with Red Hat the Programs or their components using Rec commercial redstribution, or (b) you remove distributing a copy of the Programs. 	is and each of their components are owned by Red Hat and other licensors at and other licensors, subject to the applicable license. The 'Red Hat' tradem d Hat's trademarks, regardless of whether the copy has been modified. You e and replace all occurrences of Red Hat trademarks. Modifications to the se	nd are protected under copyright law and under other laws as applic ark and the "Shadowman" logo are registered trademarks of Red Ha may make a commercial redistribution of the Programs only if (a) pe ftware may corrupt the Programs. You should read the information	ble. Title to the Programs and any component, or to any copy, modificat in the U.S. and other countries. This EULA does not permit you to distr mitted under a separate written agreement with Red Hat authorizing so found at http://www.redhat.com/about/corporate/trademark/ before
 Limited Warranty. Except as specifically st Is" without warranty of any kind, expressed or from defects in materials and manufacture un Programs will be entruly error free, appear and/or its affiliates or a Red Hat authorized or 	tated in this Section 3, a separate agreement with Red Hat, or a license for or impled, including the implied warranties of merchantability, non-infringen inder normal use for a penod of 30 days from the date of delivery to you. No or perform precisely as described in the accompanying documentation, or co distributor.	a particular component, to the maximum extent permitted under ap- ent or fitness for a particular purpose. Red Hat warrants that the m either Red Hat nor its affiliates warrants that the functions contains mply with regulatory requirements. This warranty extends only to th	licible law, the Programs and the components are provided and licensed due on which the Programs and the components are provided will be free In the Programs will meet your requirements or that the operation of r e party that purchases subscription services for the Programs from Red I
 Limitation of Remedies and Liability. To the replace it or refund the money you paid for the Biable to you for any incidental or conseque possibility of such damages. In no event shall EULA. 	he maximum extent permitted by applicable law, your exclusive remedy under the media. To the maximum extent permitted under applicable law, under no uertial damages, including lost profits or lost savings arising out of the use Red Hat's or its affiliates' liability, an authorized distributor's liability or the	r this EULA is to return any defective media within 30 days of delive circumstances will Red Hat, its affiliates, any Red Hat authorized dir i hability to use the Programs or any component, even if Red Hat, ability of the licensor of a component provided to you under this E	y along with a copy of your payment receipt and Red Hat, at its option, tributor, or the licensor of any component provided to you under this E is affiliates, an authorized distributor and/or licensor has been advised o LLA exceed the amount that you paid to Red Hat for the media under this
I accept the license agreement.			

• Select "FINISH CONFIGURATION".

de Red Hat	INITIAL SETUP			RED HAT ENTERPRISE	LINUX 8.2 (OOTPA)
				69 s	Heipi
		LICENSING	EVETEM		
		DCENSING	STOLEM		
		License Information	Subscription Manager Transient in aurorityna regeneris		
			¥		
	оли			Fit	NISH CONFIGURATION

• Log in to the Linux Desktop using the login credentials created above.



Lenovo

• Red Hat Enterprise Linux 8 Desktop screen.



• Disk Configuration Utility.



Section 4 – RAIDXpert2 Management Application

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

- Download the Linux AMD RAIDXpert2 Management Application from the Lenovo support site directly onto the Linux desktop.
- Open a terminal window from within the Linux desktop and browse to the correct location path for the driver package.

[root@DESKTOP-8CPLKEV RAIDXpert2 RHEL_Ubuntu_Linux_930_00180]# ls
9.3.0-00180_linux_raidxpert2.tgz rcadm
Raidxpert2_Linux_installguide.docx ReadMe.rtf
[root@DESKTOP-8CPLKEV RAIDXpert2_RHEL_Ubuntu_Linux_930_00180]#

• Extract the contents of the *.tgz file using the following command:

"tar xzvf 9.3.0-00180_linux_raidxpert2.tgz -C /opt"

[root@DESKTOP-8CPLKEV RAIDXpert2 RHEL_Ubuntu_Linux_930_00180]# tar xzvf 9.3.0-00
180_linux_raidxpert2.tgz -C /opt

• Change directory path to where the package was extracted to from above:

"cd /opt/raidxpert2/bin"



• To launch the AMD RAIDXpert2 Management Application, run the following command:

"./RAIDXpert2 &"



• RAIDXpert2 Management Application

						in the second									^
<u>File Array Disk View H</u> elp										285					
V 💻 DESKTOP-8CPLKEV.attiocal.net	Disk	 State 	Туре	Port Type	Capacity	Free Space	Largest I	Free	Global Spare	Uses	Model Number		Seri	al Number	
🗸 🗔 Array 1	01	Online	Disk	NVMe Gen3 x4	1.0TB	0.0MB	0.0MB		No	1	SAMSUNG M	ZVLB1T0HALR-	000L7 531	PNFOK3	01636
HII RAIDO	- 11	Online	Disk	NVMe Gen3 x4	1.0TB	0.0MB	0.0MB		No	1	SAMSUNG M	ZVLBITOHALR-	DOOL7 531	PNEOKI	00428
A Disk 0 1 (SAMSUNG MZVLB1TO	н														
Disk 1 1 (SAMSUNG MZVLB1TO)	н														
				N											
				<u>چا</u>											
	-												-		
				0			au Nama	T	Tobal Committee	C1010	T 1	Tool Chaba	0	0-1	2
	Arre	vi /dev	/sdb	Yes / /bo	n nt. /boot/ei	i. /home_NC	ay Name	BAIDO	2.0TB	NORM		F NOT ACTIVE	0.00%	Ph	No
									Carolina	And And And And			- and the		
			_					_							2
3 1001 Very	y Low	- Initialized r	nessage	s space, starting me	ssage loggi	na.		_			_		_		_

Section 5 – Setting up the YUM Repository

In order to download and install packages and other system dependencies, it's a good idea to setup the yum repository. Follow the instructions below to do so.

→ Users with a valid Red Hat Enterprise Linux subscription:

From within the Linux desktop, open a terminal window and run the following Linux commands:

subscription-manager register

o This will require a valid Red Hat username and password.

subscription-manager subscribe

subscription-manager auto-attach

→ Users without a valid Red Hat Enterprise Linux subscription:

- Open a terminal window from within the Linux desktop, login as root, and mount the Red Hat Enterprise Linux installation media within the Linux desktop.
- Copy "media.repo" from the installation source to '/etc/yum.repos.d/ directory.



• Using a text editor, edit the *rhel.repo* file copied over from the installation media from the previous step.



• Add the following text into the *rhel.repo* file.

Note: The "baseurl" lines below may be different depending on the mount location to the installation media.

🦲 Activities 🛛 🕞 Terminal 👻		
E la	enovo@localhost:/home/lenovo	×
File Edit View Search Terminal	Help	
<pre>[InstallMedia-BaseOS] name=Red Hat Enterprise Linux metadata_expire=-1 gpgcheck=1 enabled=1 baseurl=file:///run/media/lenc gpgkey=file:///etc/pki/rpm-gpg [InstallMedia-AppStream] name=Red Hat Enterprise Linux</pre>	8.2.0 - BaseOS ovo/RHEL-8-2-0-/BaseOS/ g/RPM-GPG-KEY-redhat-release 8.2.0 - AppStreaM	
metadata_expire=-1 gpgcheck=1 enabled=1		
baseurl=file:///run/media/lenc gpgkey=file:///etc/pki/rpm-gpg ~	ovo/RHEL-8-2-0-/AppStream/ g/RPM-GPG-KEY-redhat-release	
~		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
~ ~		
~ INSERT		

• Update the repository source list by executing "yum update".

🐣 Activities 🛛 🕞 Terminal 🛨			
E	lenovo@localhost:/home/	/lenovo	×
File Edit View Search Terminal	Help		
[root@lenovo-ThinkStation-P6 [root@lenovo-ThinkStation-P6 Updating Subscription Manage Unable to read consumer iden This system is not registere bscription-manager to regist Red Hat Enterprise Linux 8.2 Red Hat Enterprise Linux 8.2 Dependencies resolved. Nothing to do. Complete! [root@lenovo-ThinkStation-P6	20 lenovo]# vi /etc, 20 lenovo]# yum upda ment repositories. tity d to Red Hat Subscr: er. .0 - BaseOS .0 - AppStreaM 20 lenovo]#	/yum.repos.d/rhel.repo ate iption Management. You 133 MB/s   2.3 MB 158 MB/s   5.8 MB	can use su 00:00 00:00

## Section 6 – Installing the Aquantia LAN Driver

The onboard Aquantia LAN driver is not native to RHEL 8 on Lenovo P620 system. In order to make your LAN working, follow the steps below.

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



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

	gr	moorterb meno	increase reports	in the				
[root@localho	st Documents]#	tar zxf atlanti	c.tar.gz					
[root@localho	[root@localhost Documents]# ls							
	gz L6ETN02US14		<pre>x README.txt</pre>	version.txt				
[root@localho	st Documents]#	cd Linux/						
[root@localho	st Linux]# ls							
aq_cfg.h	aq_hw.h	aq_pci_func.h	aq_trace.c					
aq_common.h	aq_hw_utils.c	aq_phy.c	aq_trace.h	Kconfig				
aq_compat.c	aq_hw_utils.h	aq_phy.h	aq_tsn.c					
aq_compat.h	aq_macsec.c	aq_ptp.c	aq_tsn.h	Makefile				
aq_drvinfo.c	aq_macsec.h	aq_ptp.h	aq_utils.h	README.txt				
aq_drvinfo.h	aq_main.c	aq_ring.c	aq_vec.c	release_notes.txt				
aq_ethtool.c	aq_main.h	aq_ring.h	aq_vec.h	rpm-src.spec				
aq_ethtool.h	aq_nic.c	aq_rss.h	build-deb.sh	ver.h				
aq_filters.c	aq_nic.h	aq_sysfs.c	dkms.sh					
aq_filters.h	aq_pci_func.c	aq_sysfs.h						

Lenovo

- Install all prerequisites using the following commandso dnf groupinstall "Development Tools"
  - Activities 🛛 🗵 Terminal 👻 2 lenovo@localhost:/home/lenovo × File Edit View Search Terminal Help Red Hat Enterprise Linux 8.2.0 - BaseOS Red Hat Enterprise Linux 8.2.0 - AppStreaM 133 MB/s | 2.3 MB 00:00 158 MB/s | 5.8 MB 00:00 Dependencies resolved. Nothing to do. Complete! [root@lenovo-ThinkStation-P620 lenovo]# dnf groupinstall "Development Tools" Updating Subscription Management repositories. Unable to read consumer identity This system is not registered to Red Hat Subscription Management. You can use su bscription-manager to register. Last metadata expiration check: 0:00:33 ago on Wed 03 Jun 2020 05:30:27 PM EDT. Dependencies resolved. Architecture Version Package Repository Size Installing Groups: Development Tools Transaction Summary Is this ok [y/N]: y Complete! [root@lenovo-ThinkStation-P620 lenovo]#
  - o dnf install elfutils-libelf-devel

🧠 Activities 🛛 🗵 Terminal 👻				
E	lenovo	@localhost:/home/lenov	/0	×
File Edit View Search Termin	nal Help			
Is this ok [y/N]: y Complete! [root@lenovo-ThinkStation- Updating Subscription Mana Unable to read consumer id This system is not registe bscription-manager to regi Last metadata expiration of Dependencies resolved.	P620 ler Igement f lentity red to F ster. :heck: 0;	novo]# dnf install repositories. Red Hat Subscriptic :01:00 ago on Wed (	elfutils-libelf-devel on Management. You can u 03 Jun 2020 05:30:27 PM	ise su EDT.
Package A	rch	Version	Repository	Size
Installing: elfutils-libelf-devel x Installing dependencies: zlib-devel x	:86_64 :86_64	0.178-7.el8 1.2.11-13.el8	InstallMedia-BaseOS InstallMedia-BaseOS	58 k 57 k
Transaction Summary				
Install 2 Packages				

***Note**: If you don't have a valid RHEL subscription, install the packages above from the installation media. This will require manual intervention steps to modify the yum repository. See Section 4 above. Once done modifying the yum repository, install "Development Tools" and "elfutils-libelf-devel" as mentioned in the beginning of this step.

• Update the package list with the "yum update" command.



• Navigate to the Aquantia LAN driver directory and compile the modules inside the "Linux" folder using "make".

E					root@l	ocalhost:/home/le	novo/Documents/Li	nux
File Edit View Search Terminal Help								
[root@localhost Linux]# ls								
aq_cfg.h aq_compat.h aq_ethtool.c	aq_filters.h	aq_hw_utils.h	aq_main.c	aq_nic.h	aq_phy.c	aq_ptp.h	aq_rss.h	aq_trace.
aq_common.h aq_drvinfo_c_aq_ethtool.h	aq_hw.h	aq_macsec.c	aq_main.h	aq_pci_func.c	aq_phy.h	aq_ring.c	aq_sysfs.c	aq_trace.
aq_compat.c aq_drvinfo.h aq_filters.c	aq_hw_utils.c	aq_macsec.h	aq_nic.c	aq_pci_func.h	aq_ptp.c	aq_ring.h	aq_sysfs.h	aq_tsn.c
[root@localhost _inux]# make								

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

e Activities 🕟 Terminal 🗸	
File Edit View Search Terminal Help	
<pre>[root@localhost Linux]# ls aq_cfg.h aq_drvinfo.c aq_ethtool.o aq_k aq_common.h aq_drvinfo.h aq_filters.c aq_k aq_compat.c aq_drvinfo.o aq_filters.h aq_k aq_compat.h aq_ethtool.c aq_filters.o aq_r aq_compat.o aq_ethtool.h aq_hw.h aq_r [root@localhost Linux]# modprobe ptp [root@localhost Linux]# modprobe crc_itu_t [root@localhost Linux]# insmod atlantic.ko insmod: ERROR: could not insert module atlant [root@localhost Linux]#</pre>	hw_utils.c aq_macsec.o ad hw_utils.h aq_main.c ad hw_utils.o aq_main.h ad macsec.c aq_main.o ad macsec.h aq_nic.c ad

Lenovo

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



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



• To check your IP from the terminal window, run the command "ip addr" or "ifconfig -a".

Þ	lenovo@localhost:~	ĸ
File	Edit View Search Terminal Help	
	<pre>inet6 ::1/128 scope host     valid_lft forever preferred_lft forever</pre>	
2: up	enp34s0: <no-carrier,broadcast,multicast,up> mtu 1500 qdisc mq state DOWN gro default qlen 1000</no-carrier,broadcast,multicast,up>	D
3:	link/ether 00:17:b6:00:a7:55 brd ff:ff:ff:ff:ff:ff enpls0: <broadcast,multicast,up,lower up=""> mtu 1500 qdisc mg state UP group de</broadcast,multicast,up,lower>	
fau	lt qlen 1000	
	link/ether 00:17:b6:00:00:00 brd ff:ff:ff:ff:ff	
	inet 192.168.1.38/24 brd 192.168.1.255 scope global dynamic noprefixroute er	۱
p1s	9	
	valid_lft 259182sec preferred_lft 259182sec inet6 2606:a000:111a:c656::1e/128 scope global dynamic noprefixroute valid_lft 604780sec preferred_lft 604780sec inet6 2606:a000:111a:c656:f28c:8386:96d3:12ef/64 scope global dynamic nopref	f
ixr	pute	
	<pre>valid_lft 604764sec preferred_lft 604764sec inet6 fe80::60bf:6b93:3bc0:ee0f/64 scope link noprefixroute valid_lft forever preferred_lft forever</pre>	
4:	/irbr0: <no-carrier,broadcast,multicast,up> mtu 1500 qdisc noqueue state DOWM</no-carrier,broadcast,multicast,up>	N
gr	pup default qlen 1000 link/ether 52:54:00:37:0b:93 brd ff:ff:ff:ff:ff:ff inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0 valid lft forever preferred lft forever	
5:	virbr0-nic: <broadcast.multicast> mtu 1500 gdisc fg codel master virbr0 state</broadcast.multicast>	2

#### Section 7 – Installing the Nvidia Graphics Driver

In order to get optimal performance out of the Nvidia GPU, it is a good idea to install the proprietary Nvidia graphics driver. Follow the instructions below to do so.

- Download the latest Nvidia graphics driver for the appropriate Nvidia GPU from <u>here</u>.
- Install all prerequisites using the following commands:

# dnf groupinstall "Development Tools"

🥌 Activities				
4	lenovo@localhost:/home/lenovo ×			
File Edit View Search Terminal	Неір			
Red Hat Enterprise Linux 8.2. Red Hat Enterprise Linux 8.2. Dependencies resolved. Nothing to do. Complete!	0 - BaseOS 133 MB/s   2.3 MB 00:00 .0 - AppStreaM 158 MB/s   5.8 MB 00:00			
[root@lenovo-ThinkStation-P62 Updating Subscription Managem Unable to read consumer ident	20 lenovo]# dnf groupinstall "Development Tools" ment repositories. tity			
This system is not registered bscription-manager to registe Last metadata expiration cheo Dependencies resolved.	d to Red Hat Subscription Management. You can use su er. ck: 0:00:33 ago on Wed 03 Jun 2020 05:30:27 PM EDT.			
Package Architectu	ure Version Repository Size			
Installing Groups: Development Tools Transaction Summary				
Is this ok [y/N]: y Complete! [root@lenovo-ThinkStation-P620 lenovo]#				

# dnf install elfutils-libelf-devel

nerminal 🗸 😓 🔍					
E	lenovo	@localhost:/home/lenov	/0	×	
File Edit View Search Term	ninal Help				
Is this ok [y/N]: y Complete! [root@lenovo-ThinkStation-P620 lenovo]# dnf install elfutils-libelf-devel Updating Subscription Management repositories. Unable to read consumer identity This system is not registered to Red Hat Subscription Management. You can use su bscription-manager to register. Last metadata expiration check: 0:01:00 ago on Wed 03 Jun 2020 05:30:27 PM EDT. Dependencies resolved.					
Package	Arch	Version	Repository	Size	
Installing: elfutils-libelf-devel Installing dependencies: zlib-devel	x86_64 x86_64 x86_64	0.178-7.el8 1.2.11-13.el8	InstallMedia-BaseOS InstallMedia-BaseOS	58 k 57 k	
Transaction Summary					
Install 2 Packages					

<u>Note</u>: If you do not have a valid RHEL subscription, then install the packages above from the Red Hat Enterprise Linux installation media. This will likely require manual intervention steps to modify the yum repository. See Section 4 above.

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- Blacklist the Linux Nouveau driver by following the steps below:
  - From within Linux, open a terminal window and log in as root.

# su -

 Using a text editor, create and modify the following file /etc/modprobe.d/blacklist.conf

# vi /etc/modprobe.d/blacklist.conf



• Add the following line, "blacklist nouveau" and save and exit the file.



• Run the following command to update the initramfs file.

# dracut –force

🧠 Activities 🛛 🖂 Terminal 🔫	
E lenovo@localhost:/home/lenovo	
File Edit View Search Terminal Help	
<pre>[root@lenovo-ThinkStation-P620 lenovo]# vi /etc/modprobe.d/ firewalld-sysctls.conf mlx4.conf tuned.conf kvm.conf nvdimm-security.conf vhost.conf lockd.conf truescale.conf [root@lenovo-ThinkStation-P620 lenovo]# vi /etc/modprobe.d/blacklist.conf [root@lenovo-ThinkStation-P620 lenovo]# dracutforce</pre>	

- Reboot the system.
- Open a terminal window from within the Linux desktop, log in as root, and execute the command "init 3".



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 Log in as root, change directory path to the download directory to where the Nvidia driver was downloaded.



• Make the Nvidia driver executable.

# chmod +x Nvidia-*



• Run the driver executable.

# ./Nvidia*

[lenovo@lenovo-ThinkStation-P620 Downloads]\$ ./NVIDIA-Linux-x86_64-440.82.run

• The driver installation should start.

h and a second	NUIDIA I	Accelerated	l Graphics	Driver	for	Linux-	-x86_(
Building kernel modules							
				15%			

Lenovo

• Select "Yes" to install Nvidia's 32-bit compatible libraries.

	NVIDIA Accelerated Graphics Driver for Linux-x86_64 (440.82)	
Install NVIDIA's 32-bit compatibility libraries?		
Yes 🚽		No

• Select "Install and overwrite existing files".

ibglond was found. All of the essential libglond	libraries are present, but one or more optional components are missing.	. Do you want to install a full copy of libglynd? Th
Don't install libglynd files	Install and overwrite existing files	Abort installation.

• Driver installation continues.

MUDIA Accelerated Graphics Driver for Linux-x86_641 (48.82)
Installing 'WVDIA Accelerated Graphics Driver for Linux-x06_04' (400.02):
Executing: `vusrvsbinvdepmod -a ` (this may take a moment)
924

• Select "Yes" update the X configuration file.



• Select "OK" to acknowledge driver installation is complete.

Your X configuration file has been successfully updated. Installation of the NUIDIA Accelerated Graphics Driver for Linux-x86_64 (version: 440.82) is now complete.

- Lenovo
- Execute the following command to verify the Nvidia driver is installed and loaded.

# nvidia-smi

[root@lenovo-ThinkStation-P620 Downloads]# nvidia-smi Wed Jun 3 17:40:26 2020						
I NVIDIA-SMI 440.82 Driver Version: 440.82 CUDA Version:	10.2 I					
GPU Name Persistence-MI Bus-Id Disp.A   Volatile Unc   Fan Temp Perf Pwr:Usage/Capl Memory-Usage   GPU-Util Co	orr. ECC I mpute M. I					
	N∕A I Default I					
+GF I Processes: GF I GPU PID Type Process name Us	UMemory I age I					
No running processes found						



# Section 8 – Revision History

Version	Date	Author	Changes/Updates
1.0	7/15/2020	Jason Moebs	Initial launch release