Chapter 1. DFFFSecuring Diretadmin Control Panel Installation on VPS

It is essential to secure your operating system especially if it is setup for production. In this tutorial we will be using a VPS server from Linode which supports full disk encryption using LUKS. After that, we will install Directadmin web control panel to easily manage web files and tweak some security settings in it. As for some extra tips, we will be discussing some problems, tips and tricks when facing problems in our server. For some of these tips, I will be discussing on how we can create some bash scripts to monitor our server stability and security. If you are using Digital Ocean, this tutorial will not work especially for LUKS disk encryption because Digital Ocean only support mounted volume partition encryption not a full operating system disk encryption.

I use CentOS 8 for this tutorial because this OS is the most popular and stable Linux operating system for managing server and web applications. The Linode package that we will be using is 4GB RAM with 80GB SSD. Also note that you are able to resize the LUKS partition later into high plan without losing data.

Chapter 2. Securing CentOS partition with LUKS disk encryption

In this chapter, we will be discussing on how to secure CentOS with LUKS disk encryption

Section 2.01   Create first empty disk on Linode for storing installer disk

Create the following first empty disk for storing installer disk with the following details (You can refer to screenshot):

- Label name: **Boot**
- Size: **1024GB**
- File type: **RAW**
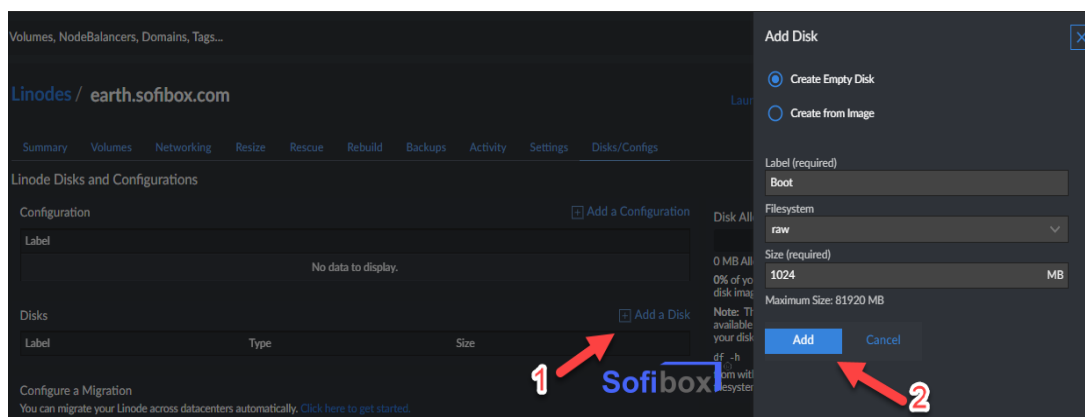
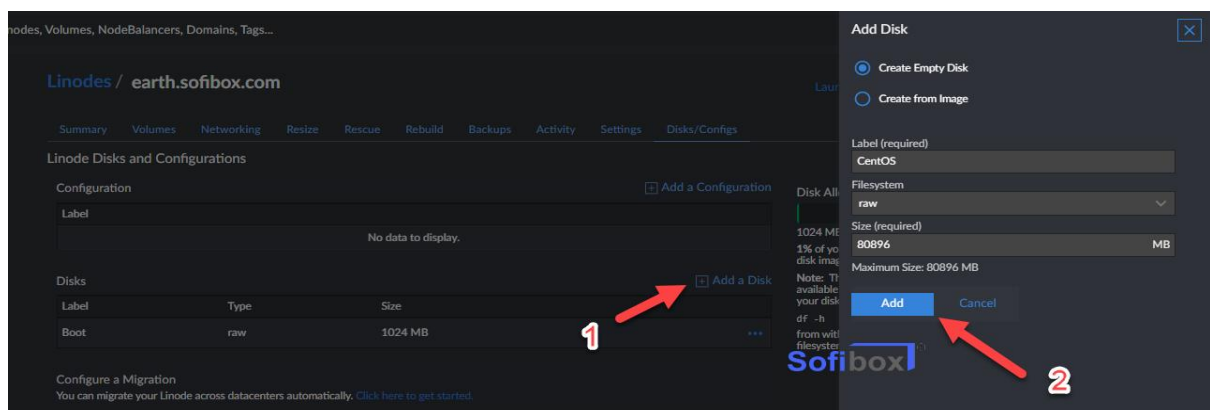*Screenshot 2-a How to create first empty disk with RAW format for storing installer disk*

We recommend that you set boot disk size to 1GB because CentOS netbook disk installer has size over 600MB. The size of this partition depends on your iso distribution file. For example, in Debian

netbook installer, the recommended size is 500MB. You can set the size as larger you want to make plenty room for the installer disk but do not oversized it because your OS partition needs this space too.

Section 2.02   Create second empty disk on Linode for storing operating system

Create the following first empty disk for storing operating system with the following details (You can refer to screenshot):

- *Label name: **CentOS***
- *Size: **[The rest of the space left]***
- *File type: **RAW***

Screenshot 2-b How to create second empty disk with RAW format for storing operating system

In screenshot 2-b, we will use the rest of the disk space left for our operating system which has 80896MB available. Then, give the label for this disk as 'CentOS' and the most important part in this section is, you need to make sure the file type is **set to RAW** or this will not work.

Section 2.03   Create 2 boot configuration profiles for booting disk

Create the following boot configuration profiles with the following details:

(a)   First Profile
- *Label: **Boot Profile***
- *Kernel: **Direct Disk***
- *Block device assignment for /dev/sda: **CentOS** disk image*
- *Block device assignment for /dev/sdb: **Boot** disk image*
- *root / boot device: **Standard /dev/sdb***
- *Disable all the options under Filesystem / Boot Helpers for each of them*
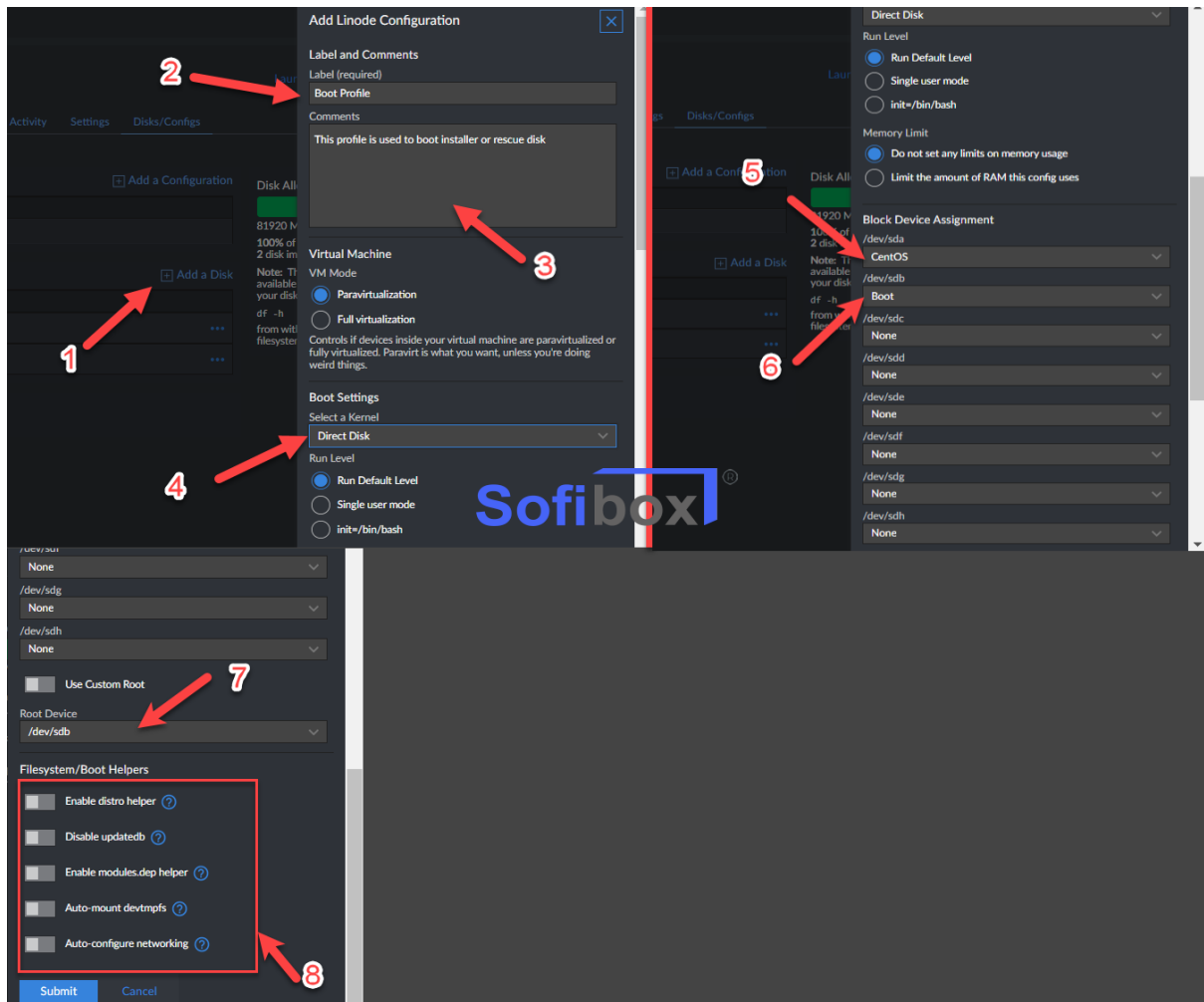
*Screenshot 2-c How to create first profile for booting installer file*

(b) Second Profile

- *Label: **CentOS Profile***
- *Kernel: **Direct Disk***
- *Block device assignment for /dev/sda: **CentOS** disk image*
- *root / boot device: **Standard /dev/sda***
- *Disable the options under Filesystem / Boot Helpers for each of them*
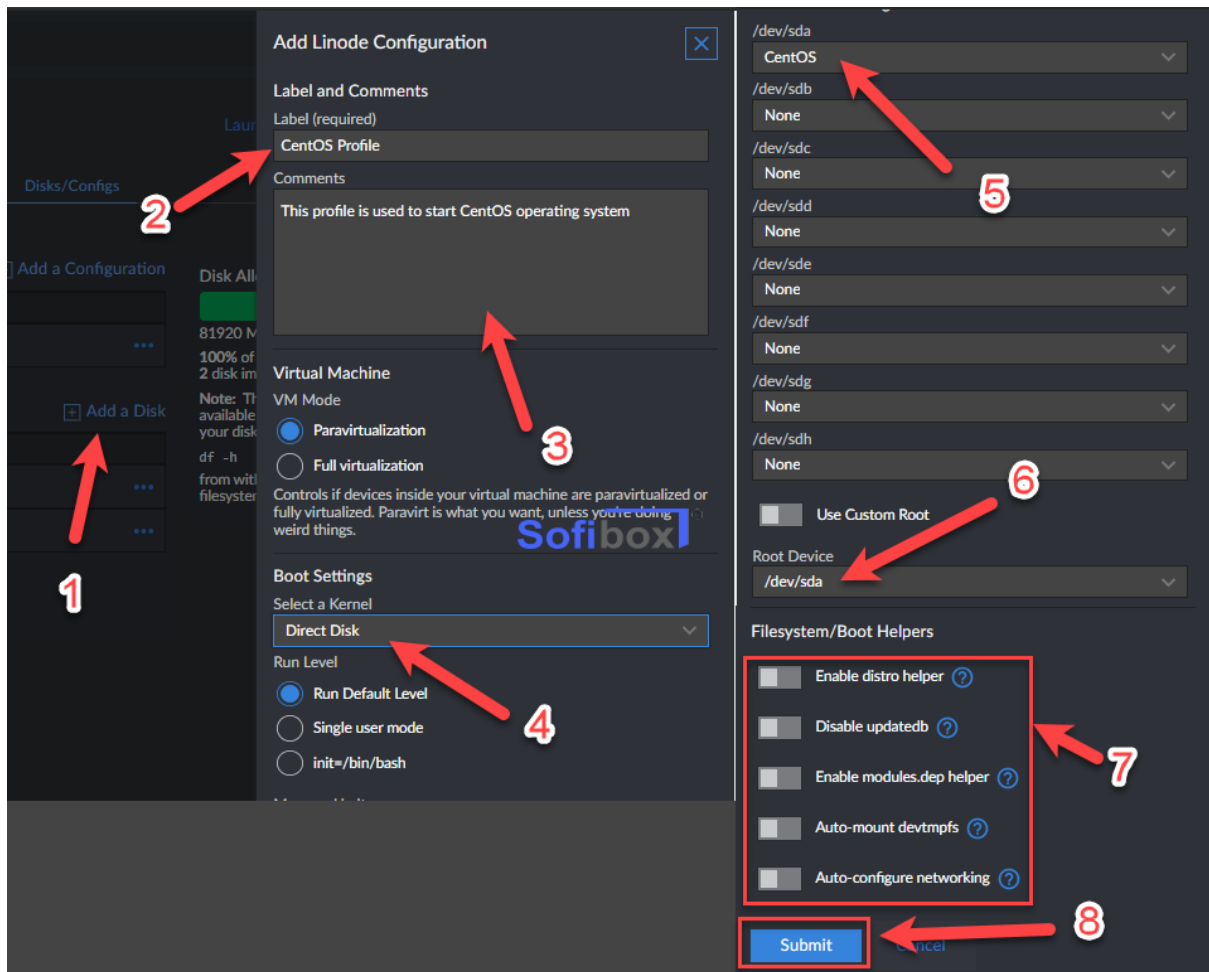
Screenshot 2-d How to create a second profile for booting operating system

Section 2.04   Booting to rescue mode in Linode

Boot into Rescue Mode with your **Boot disk** mounted to **/dev/sda** (Refer to the screenshot)
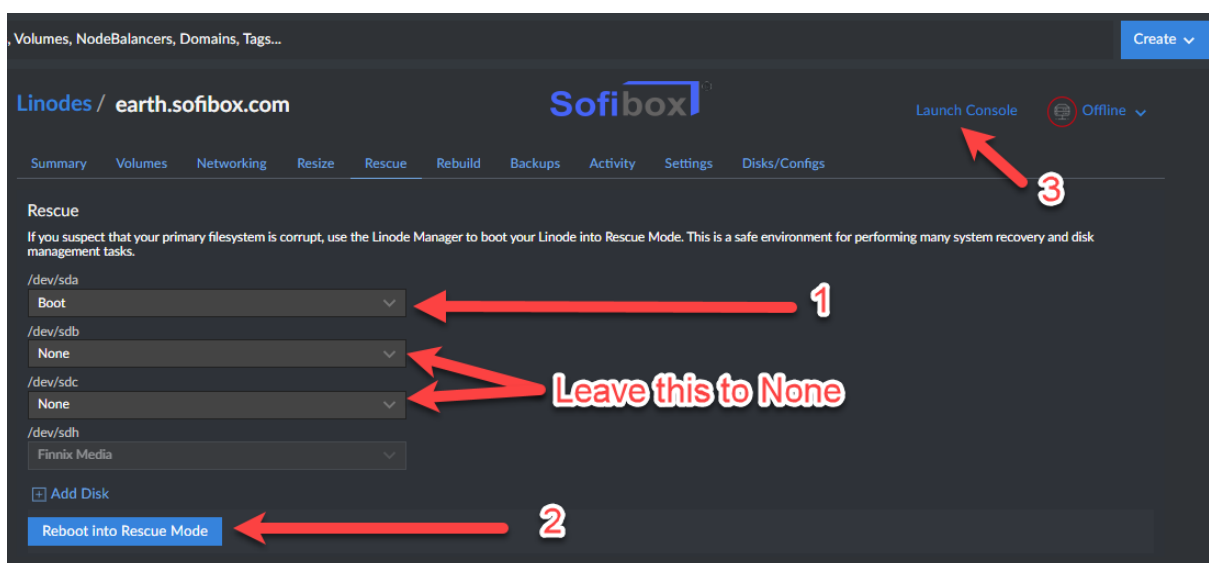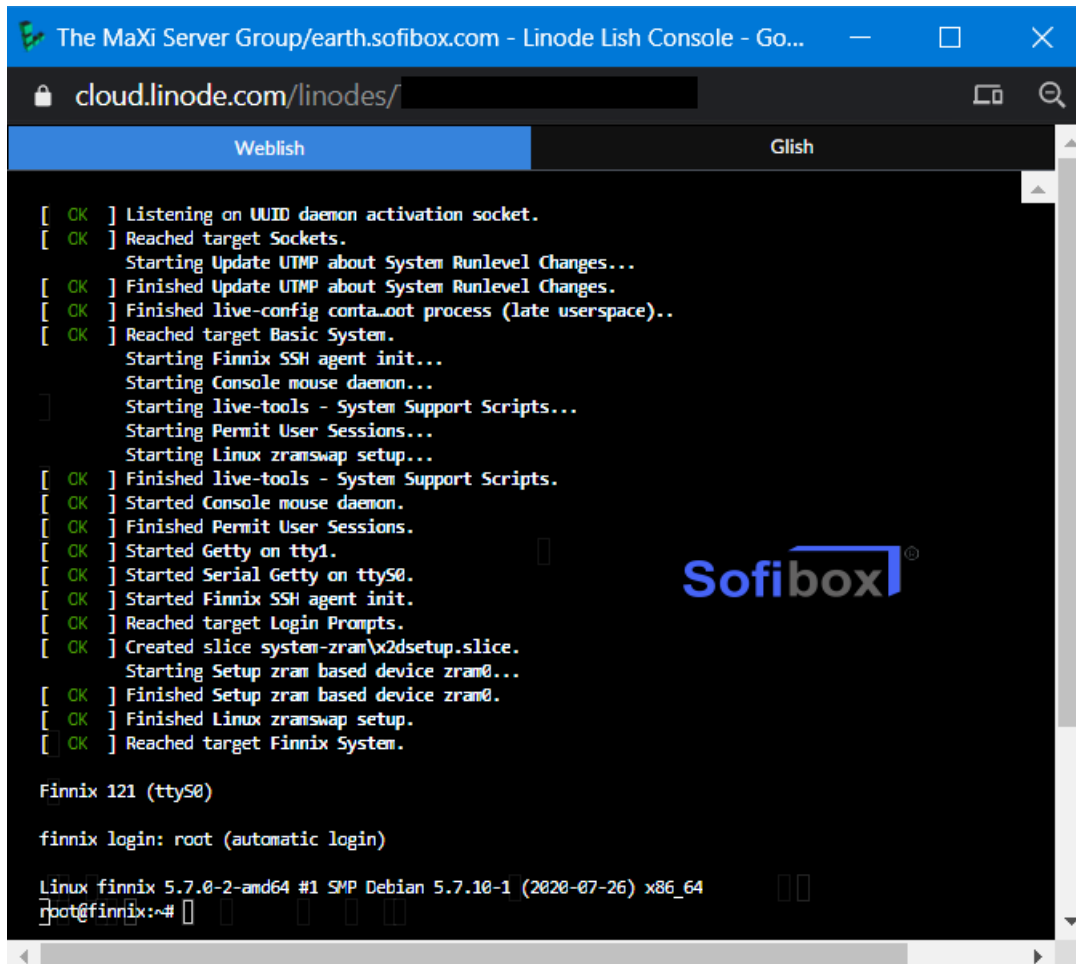
Screenshot 2-e How to boot into Rescue Mod

Click the 'Reboot into Rescue Mode' button as shown in Screenshot 2-e. Then connect to your Linode using the GLish/Lish Console by clicking on `Launch Console` link.

Section 2.05   Download and extract CentOS into boot disk

After clicking 'Launch Console' link, the following Finnix rescue mode in Weblish will be poped up like in the screenshot 2-f below.

Screenshot 2-f Rescue Mode with Finnix

At this point, we will download the small iso image using Rescue Mode from the nearest mirror. The RAM disk will store this file.

At this moment, the latest stable version of CentOS is 8.3.2011 and this is the direct link to the iso file: http://centos.ipserverone.com/centos/8.3.2011/isos/x86_64/CentOS-8.3.2011-x86_64-boot.iso

You should get the latest ISO for CentOS netboot for good system stability. The link is here: http://isoredirect.centos.org/centos/8/isos/x86_64/

Now, In the rescue terminal type the following commands to download and extract this CentOS iso file into /dev/sda:

```
wget http://centos.ipserverone.com/centos/8.3.2011/isos/x86_64/CentOS-8.3.2011-x86_64-boot.iso
mv CentOS* mini.iso
dd if=mini.iso of=/dev/sda
```


Screenshot 2-g Download and extract CentOS iso into /dev/sda (boot disk)

## Section 2.06   Install CentOS 8 from boot disk

Now that we have an installer disk mounted at /dev/sda, we need to reboot into Boot configuration profile, at Disks/Configs tab (look at the screenshot for more details)
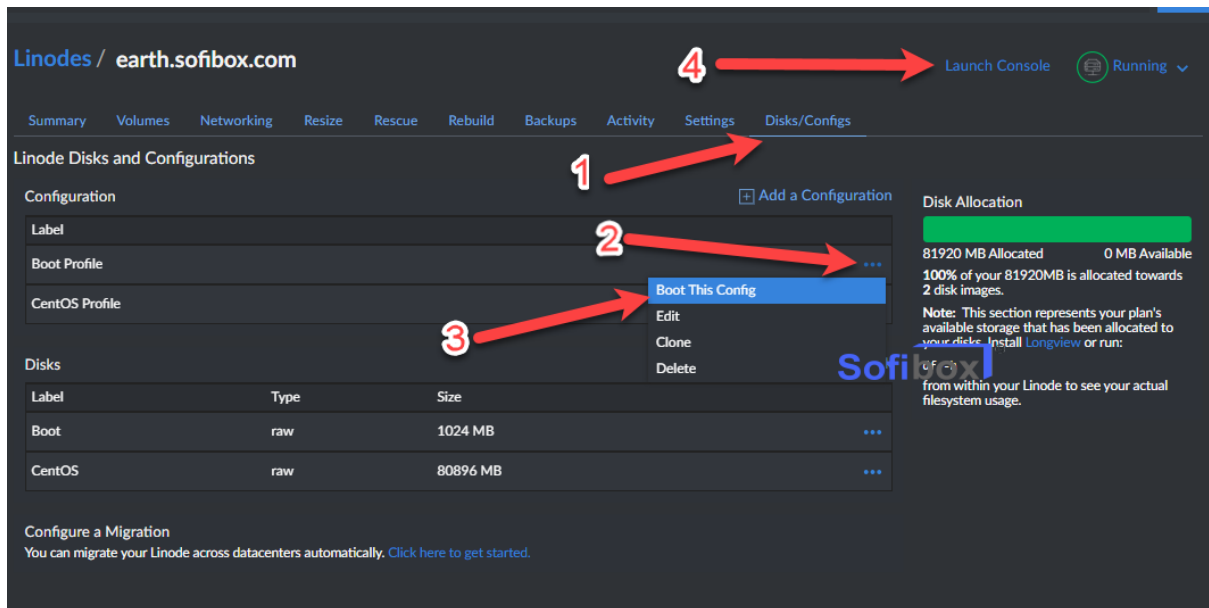
*Screenshot 2-h How to boot into Boot configuration profile*

After that, open the Glish graphical console via Launch Console link as shown in Screenshot 2-h. We use Glish to view CentOS installation GUI through Linode console. You will see the following CentOS installer screen in screenshot 2-I and now it is time to install out CentOS 8 server via this GUI.

1. Choose your language (I select English / English United States) and click Continue
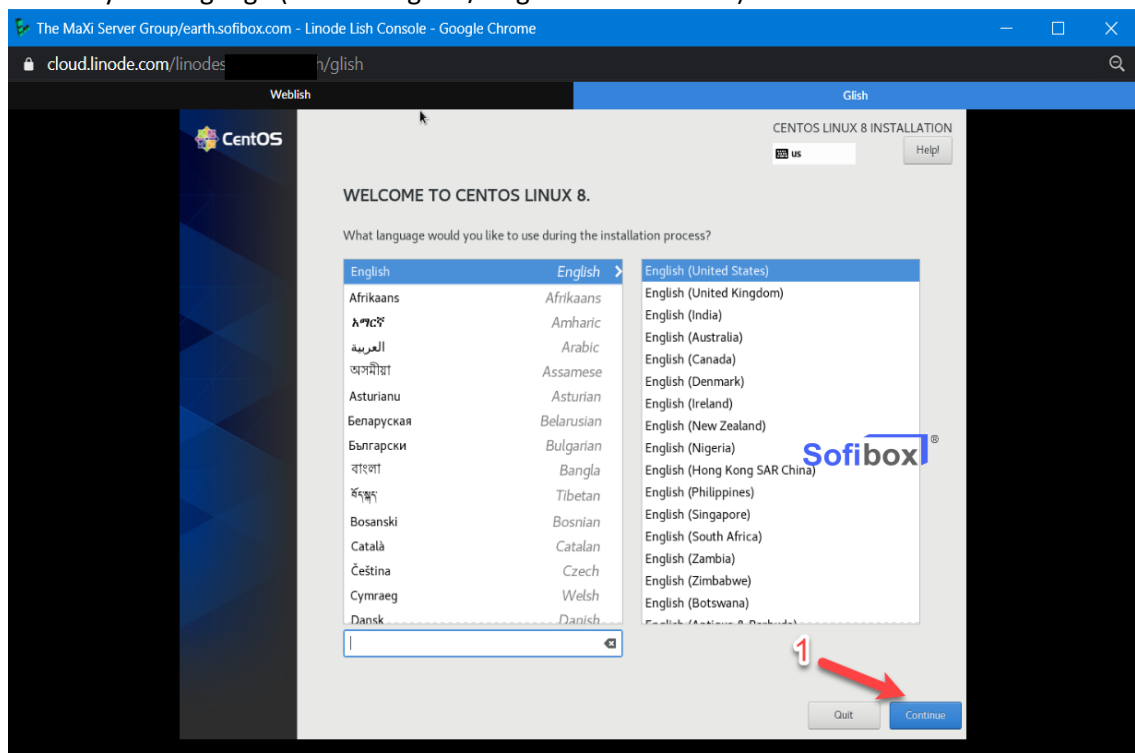
Screenshot 2-i CentOS Linux 8 - Language Selector

2. After that you will see the following installation summary page. You need to complete items marked with warning icon before you can click on `Begin Installation`. Let us begin by clicking on the 'Network & Host Name'.
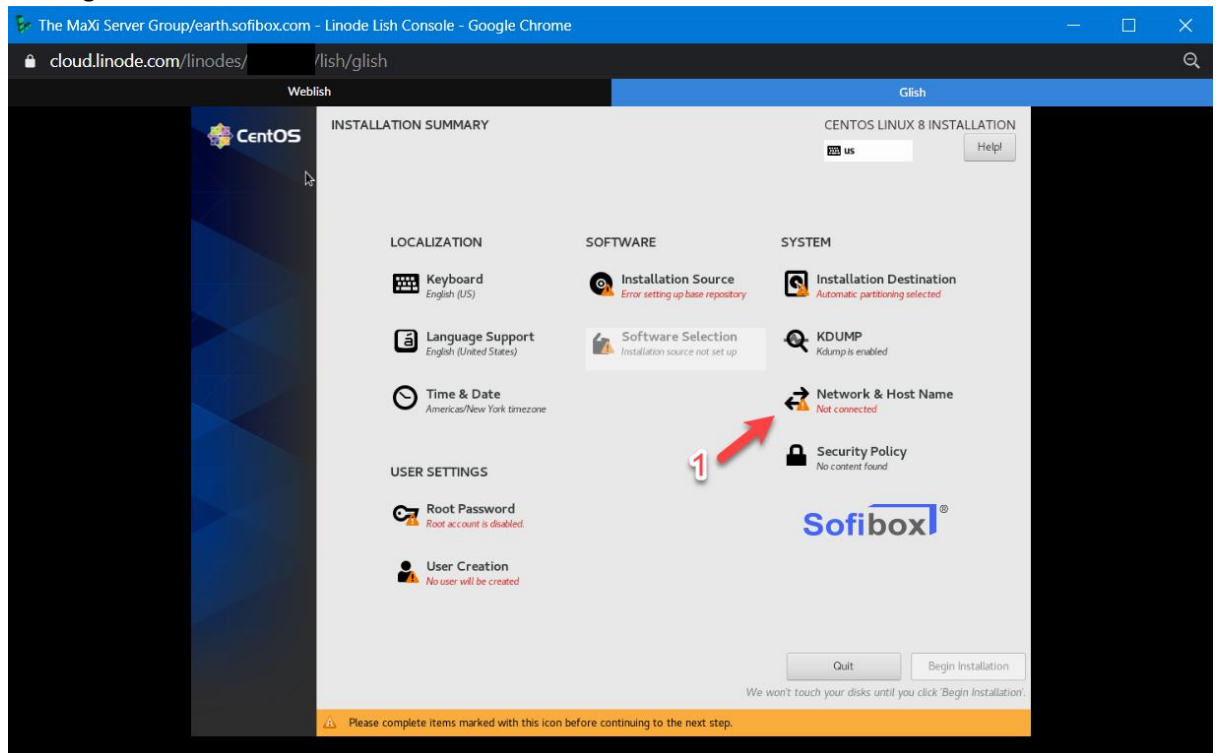

Screenshot 2-j Installation Summary - Let us begin click on the Network & Host Name

3. Now at the Network & Host Name page, please fill in (1) full qualified domain name (FQDN) then (2) clicks on Apply button. After that, (3) turn the Ethernet switch from OFF to on to connect to the internet and download latest update automatically during CentOS 8

installation. When finished clicked on (4) 'Done'. Refer the screenshot 2-k for visual step.
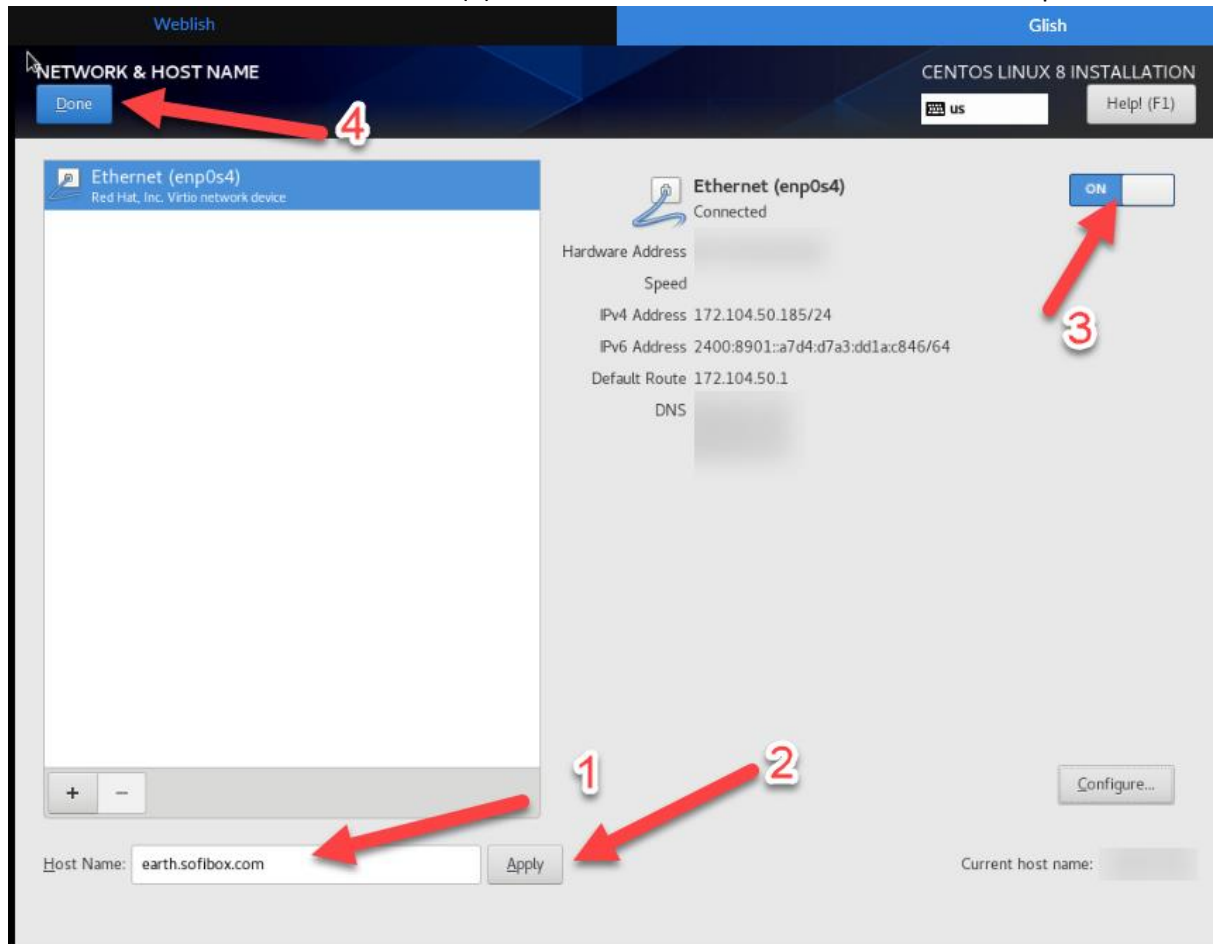
Screenshot 2-k Network & Hostname setting

4. Now click on the Installation Source from screenshot 2-j and an installation source page will appear as shown below. Fill in the baseOS repository and click done when finished.

Screenshot 2-l Installation source default BaseOS URL from CentOS. It is recommend to select the fastest mirror for BaseOS by visiting this URL. https://www.centos.org/download/mirrors/ for example, this is the fastest URL mirror in my location: http://centos.shinjiru.com/centos/8/BaseOS/x86_64/os/.
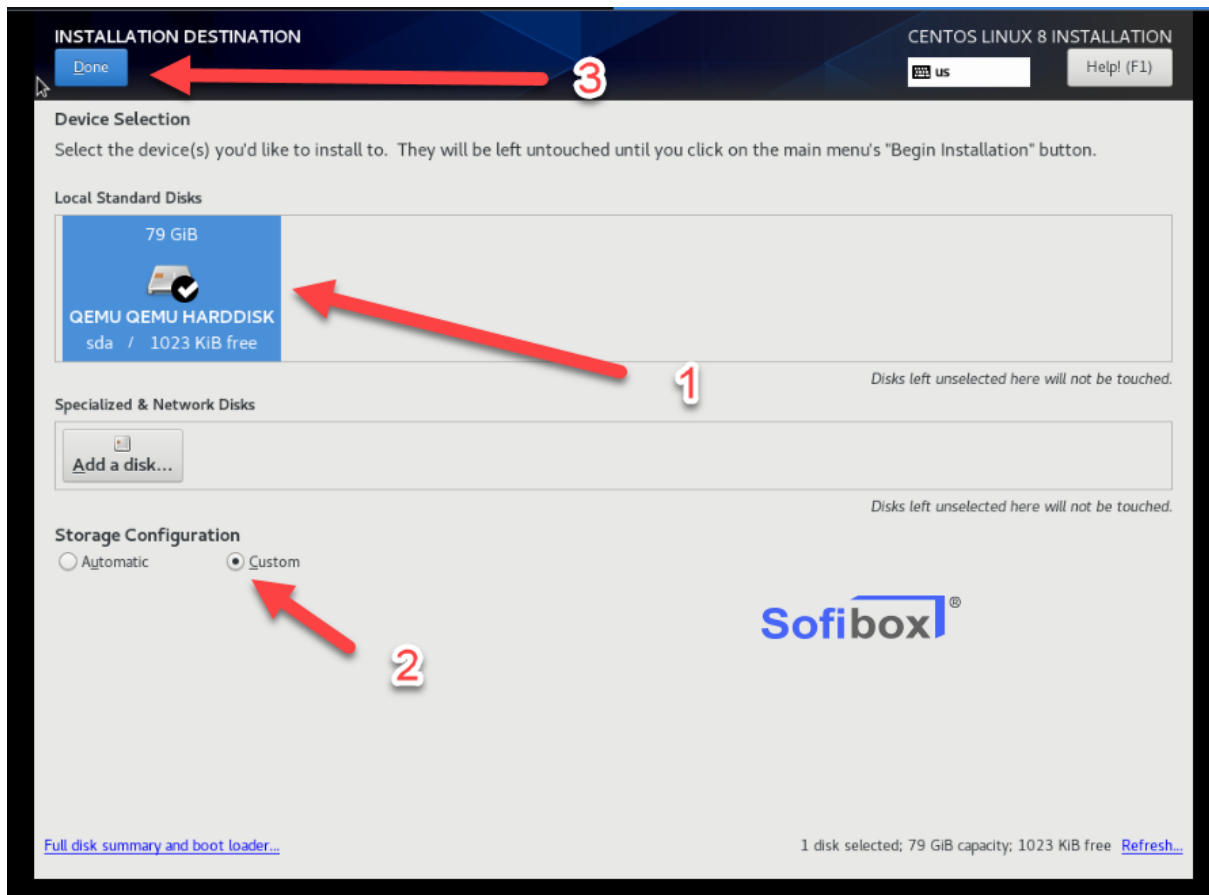
5. Now, it might take a moment for the OS to download information from the source installation. When done, click on Software Selection icon from screenshot 2-j. A software selection page will be shown like in the screenshot below. At this point, select Minimal

Install and click Done.
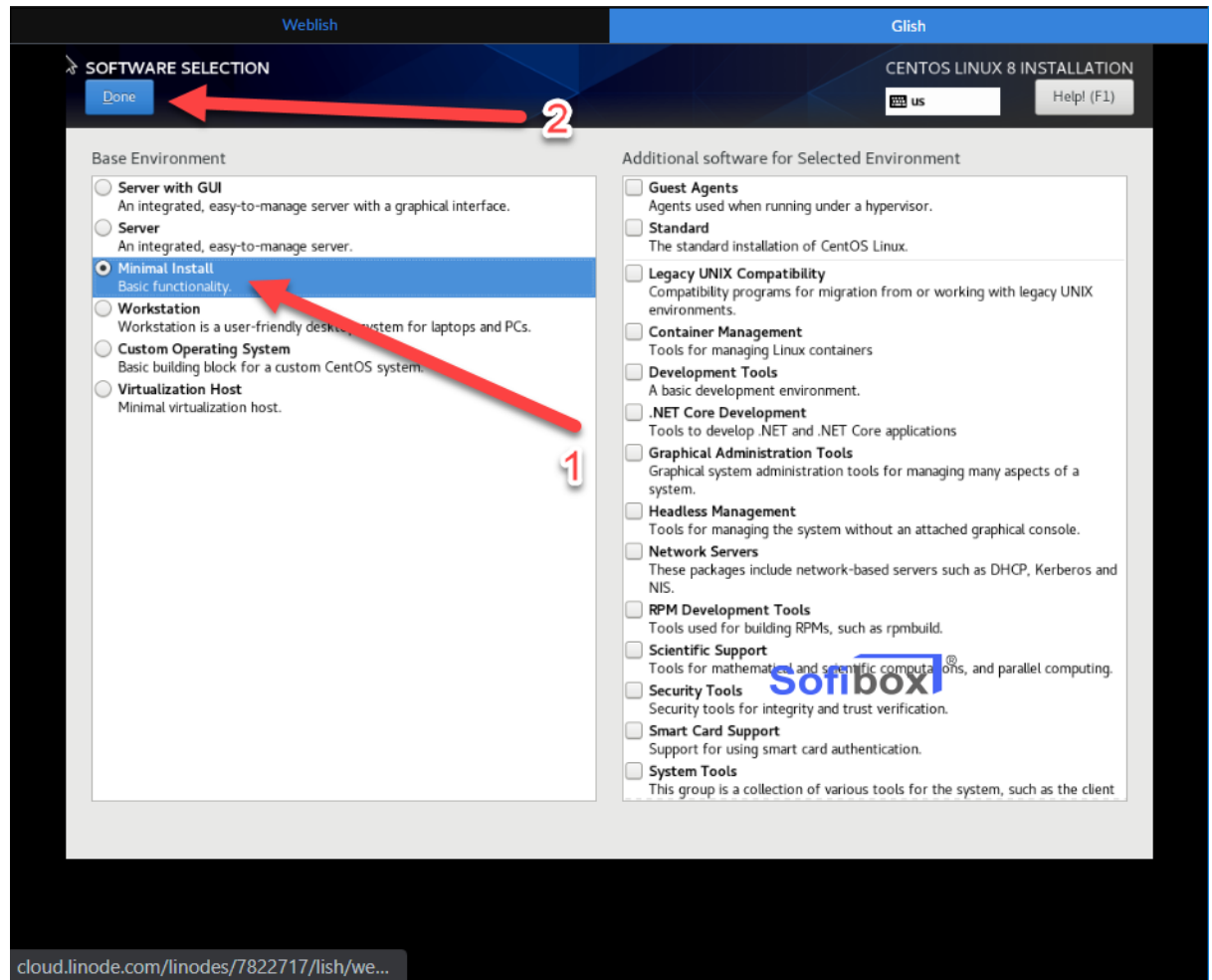
Screenshot 2-m Installation Selection. For headless machine, it is better to select minimal install, we can install others later.

6. Next select on installation destination from the screenshot 2-j. (1) Select a disk, then (2) click on custom partition, and leave everything as default (centOS will distribute the disk size and make few partitions depends on your disk size). When finished, (3) click on Done

To be continued …