BOSS GNU/Linux Installation Manual

Version 6.0

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1 Introduction

We are delighted that you have decided to try BOSS GNU/Linux, and are sure that you will find that BOSS GNU/Linux distribution is unique. BOSS GNU/Linux brings together high-quality free software from around the world, integrating it into a coherent whole. We believe that you will find that the result is truly more than the sum of the parts. We understand that many of you want to install BOSS GNU/Linux without reading this manual, and the Debian Installer is designed to make this possible.

1.1 What is BOSS GNU/Linux?

BOSS comes with a set of features which are relevant to primary and secondary school environment. BOSS is a GNU/Linux distribution, developed by C-DAC, to provide a complete usable Operating System consisting of GUIs and console applications for routine tasks and additional utilities which are useful for teaching/learning in schools.

BOSS DVD pack consists of 3 sections. The Install section which gives you a BOSS Desktop in your system, a Live section which allows you to try BOSS without installing on the Hard Disk and without disturbing your existing OS and the Utility section which has some of the extra packages like libreoffice, Apache web server, scripting languages etc. You can get more details about BOSS DVDs and their functionality in our website http://www.bosslinux.in

1.1.1 INSTALL

To install BOSS , you need to have a minimum of 10.0 GB of hard disk space, 512 MB of RAM and a DVD-ROM drive. Insert the BOSS GNU/Linux DVD into the drive, restart your computer and boot from DVD by editing the BIOS setup. The BOSS screen appears with three options:

1) Start BOSS Live
2) Install BOSS-Graphical
3) Install BOSS-Text Mode

To use BOSS Live select the *"Start BOSS Live" option.*

You can proceed with the default installation by clicking *"Install BOSS-Graphical"* or *"Install BOSS-Text Mode"*. The details about the installation options and screen shots can also be found at BOSS GNU/Linux website http://www.bosslinux.in.

1.1.2 BOSS Live

BOSS Live is a GNU/Linux distribution that boots and runs completely from DVD. It includes recent linux software and desktop environments, with programs such as Libreoffice, GIMP, firefox, Pidgin, Totem and hundreds of other quality open source programs. It also includes document converter, Presentation tool, bluetooth device support and Input method for Indian Languages.

Using Live option you can test BOSS before installing it on your harddisk.
Later Proceed with Installation

1.1.3 UTILITY

The DVD consists of workstation related packages, like Apache webserver, egroupware collaboration tool, Openoffice fonts and some other language fonts etc., You can find out the usage of the Utility below. This BOSS Utility disc or Addon disc contains the packages related to workstation.

Usage of Utility:

1. Insert the DVD ,make sure it mounts properly.
2. Click “BOSS Utilities” menu item from **System -> Administration** menu.
3. Continue with instructions provided.
4. Go through the README file available in DVD.

1.1.4 BOSS GNU/Linux Components

1. Kernel – 3.16.0-4-686-pae
2. Firefox Web Browser
3. Pidgin Internet Messenger
4. Evolution Mail Client
5. LibreOffice
6. BOSS Presentation Tool
7. Bulk Document Converter
8. Totem Movie Player
9. Banshee Music Player

10. guvcview Image viewer
11. Shotwell - Personal photo management application
12. Simple Scan - Image scanning program
13. K3b
14. I-Bus – Intelligent Input Bus
15. Document Viewer
16. Partition Editor
17. XChat – Internet Relay Chat
18. Synaptic Package Manager
19. Remmina Remote Desktop Client
20. Transmission BitTorrent Client

1.2 BOSS GNU/Linux Licensing

BOSS GNU/Linux is a collection of many computer programs and documents created by BOSS Team. Each of these works might come under a different license. Our License Policy describe the process that we follow in determining which software we will ship by default on the BOSS Install, Live and Utility.

The BOSS team is committed to Free and Open Source Software. The world is a better place if you have the source code to all the software on your computer, and the right to use that source code in constructive ways.

We would invite you to read more about our Free Software Philosophy and help to shape this policy further.

Categories of software in BOSS GNU/Linux

We organize the thousands of software packages available for BOSS GNU/Linux into three key components: main, contrib, non-free. Software is published in one of those components based on whether or not it meets our Free Software Philosophy, and the level of support we can provide for it. This policy really addresses the software that you will find in main and non-free. Those components contain software that is fully supported by the BOSS team and must comply with this policy.

All software in BOSS main and non-free must be licensed in a way that is compatible with our license policy. There are many definitions of "free" and free software so we have included our own set of guidelines, listed below.

BOSS GNU/Linux "main" Component License Policy

All application software included in the BOSS GNU/Linux main component:

Must include source code. The main component has a strict and non-negotiable requirement that application software included in it must come with full source code.

Must allow modification and distribution of modified copies under the same license. Just having the source code does not convey the same freedom as having the right to change it. Without the ability to modify software, the BOSS community cannot support software, fix bugs, translate it or improve it.

1.2.1 The BOSS Free & Open Source Software Guidelines

1.Free Redistribution

The license of a BOSS GNU/Linux component may not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license may not require a royalty or other fee for such sale.

2.Source Code

The program must include source code, and must allow distribution in source code as well as compiled form.

3.Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

4.Integrity of The Author's Source Code

The license may restrict source-code from being distributed in modified form _only_ if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software. (This is a compromise. The BOSS group encourages all authors not to restrict any files, source or binary, from being modified.)

5.No Discrimination Against Persons or Groups

The license must not discriminate against any person or group of persons.

6.No Discrimination Against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from

being used for genetic research.

7.Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

8.License Must Not Be Specific to BOSS GNU/Linux

The rights attached to the program must not depend on the program's being part of a BOSS GNU/Linux system. If the program is extracted from BOSS GNU/Linux and used or distributed without BOSS GNU/Linux but otherwise within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the BOSS system.

9.License Must Not Contaminate Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be free software.

10.Example Licenses

The "GPL", "BSD", and "Artistic" licenses are examples of licenses that we consider "free".

2 Installation Steps

This manual helps you to install BOSS GNU/Linux on desktops and laptops. The installation system is flexible enough to use even if you have no previous knowledge of Linux or computer networks. If you select default options, BOSS GNU/Linux provides a complete desktop operating system, including productivity applications, Internet utilities, and desktop tools.

This document does not detail all of the features of the installation system. If you want the complete details of the features during installation please check our BOSS website at http://www.bosslinux.in

2.1 Before You Begin

2.1.1 System Requirements

BOSS GNU/Linux does not impose hardware requirements beyond the requirements of the Linux kernel and the GNU tool-sets. Therefore, any architecture or platform to which the Linux kernel, libc, gcc, etc. have been ported, can run BOSS GNU/Linux. To install BOSS GNU/Linux you need very minimum system configurations. The hardware requirement details are as follows:

- Hard Disk – 10.0 GB (unpartitioned space)
- RAM – 512 MB
- DVD-ROM drive

To install BOSS GNU/Linux from disc, you need the installation DVD, currently, BOSS GNU/Linux supports the *i386*, *ppc*, and *x86_64* architectures. These architectures are described below:

i386

Intel x86-compatible processors, including Intel Pentium and Pentium-MMX, Pentium Pro, Pentium-II, Pentium-III, Celeron, Pentium 4, and Xeon; VIAC3/C3-m and Eden/Eden-N; and AMD Athlon, AthlonXP, Duron, AthlonMP, and Sempron

x86_64

64-bit AMD processors such as Athlon64, Turion64, Opteron; and Intel 64-bit processors such as EM64T

2.1.2 Overview of the Installation Process

First, just a note about re-installations. With BOSS GNU/Linux, a circumstance that will require a complete re-installation of your system is very rare; perhaps mechanical failure of the

hard disk would be the most common case. Many common operating systems may require a complete installation to be performed when critical failures take place or for upgrades to new OS versions. Even if a completely new installation isn't required, often the programs you use must be re-installed to operate properly in the new OS. Under BOSS GNU/Linux, it is much more likely that your OS can be repaired rather than replaced if things go wrong. Upgrades never require a wholesale installation; you can always upgrade in-place. And the programs are almost always compatible with successive OS releases. If a new program version requires newer supporting software, the BOSS packaging system ensures that all the necessary software is automatically identified and installed. The point is, much effort has been put into avoiding the need for re-installation, so think of it as your very last option. The installer is not designed to re-install over an existing system. Here's a road map for the steps you will take during the installation process.

1. Back up any existing data or documents on the hard disk where you plan to install.
2. Gather information about your computer and any needed documentation, before starting the installation.
3. Create partition-table space for BOSS on your hard disk.
4. Set up the first boot drive to DVD drive (through CMOS setup) and restart your system.
5. Insert the BOSS GNU/Linux DVD into the drive
6. Boot the installation system.
7. Select installation language.
8. Activate the ethernet network connection, if available.
9. Create and mount the partitions on which BOSS GNU/Linux will be installed.
10. Watch the automatic install/setup of the base system.
11. Installs additional software (tasks and/or packages), at your discretion.
12. Installs a boot loader which can start up BOSS GNU/Linux on your existing system.
13. Load the newly installed system for the first time, and make some initial system settings.
14. If you have problems during the installation, it helps to know which packages are involved in which steps.
15. Introducing the leading software actors in this installation drama: The installer software, debian-installer, is the primary concern of this manual. It detects hardware and loads appropriate drivers, uses dhcp-client to set up the network connection, and runs debootstrap to install the base system packages. Many more actors play smaller parts in this process, but debian-installer has completed its task when you load the new system for the first time. Upon loading the new base system, base-config supervises adding users, setting a time zone (via tzsetup), and setting up the package installation

system (using apt-setup). It then launches tasksel which can be used to select large groups of related programs, and in turn can run aptitude which allows you to choose individual software packages.

2.1.3 Back Up Your Existing Data!

Before you start, make sure to back up every file that is now on your system. If this is the first time a non-native operating system has been installed on your computer, it's quite likely you will need to re-partition your disk to make room for BOSS GNU/Linux. Anytime you partition your disk, you should count on losing everything on the disk, no matter what program you use to do it. The programs used in installation are quite reliable and most have seen years of use; but they are also quite powerful and a false move can cost you.

Even after backing up be careful and think about your answers and actions. Two minutes of thinking can save hours of unnecessary work. If you are creating a multi-boot system, make sure that you have the distribution media of any other present operating systems on hand. Especially if you repartition your boot drive, you might find that you have to reinstall your operating system's boot loader, or in many cases the whole operating system itself and all files on the affected partitions.

2.2 Beginning the Installation

To begin installation of BOSS GNU/Linux, boot the computer from the boot media i.e from CD or DVD or any other storage bootable media like USB .

The *BIOS* (Basic Input/Output System) on your computer must support the type of boot media you select. The BIOS controls access to some hardware devices during boot time. Any computer that meets the minimum recommended specification for BOSS GNU/Linux can boot from a CD or DVD drive with the first disc.

If you are not sure what capabilities your computer has, or how to configure the BIOS, consult the documentation provided by the manufacturer. Detailed information on hardware specifications and configuration is beyond the scope of this document.

Aborting the Installation

To abort the installation process at any time before the **Installing Packages** screen, either press *Ctrl+Alt+Del* or power off the computer with the power switch. BOSS GNU/Linux makes no changes to your computer until package installation begins. Booting from Disc

To boot your computer from disc:

1. Switch on the computer.
2. Insert the disc into the DVD drive.
3. A screen appears to ask for a booting option.,

1) *Start BOSS Live*
2) *Install BOSS-Graphical*
3) *Install BOSS-Text Mode*
4) *Advance options*
5) *Help*

1. Booting through “Start BOSS Live” will take you a tour around BOSS virtually. Using this Live Boot you can check out the BOSS desktop and its applications and once you are satisfied with BOSS., you can come back and choose for “Install BOSS-Graphical” or “Install BOSS-Text Mode”.

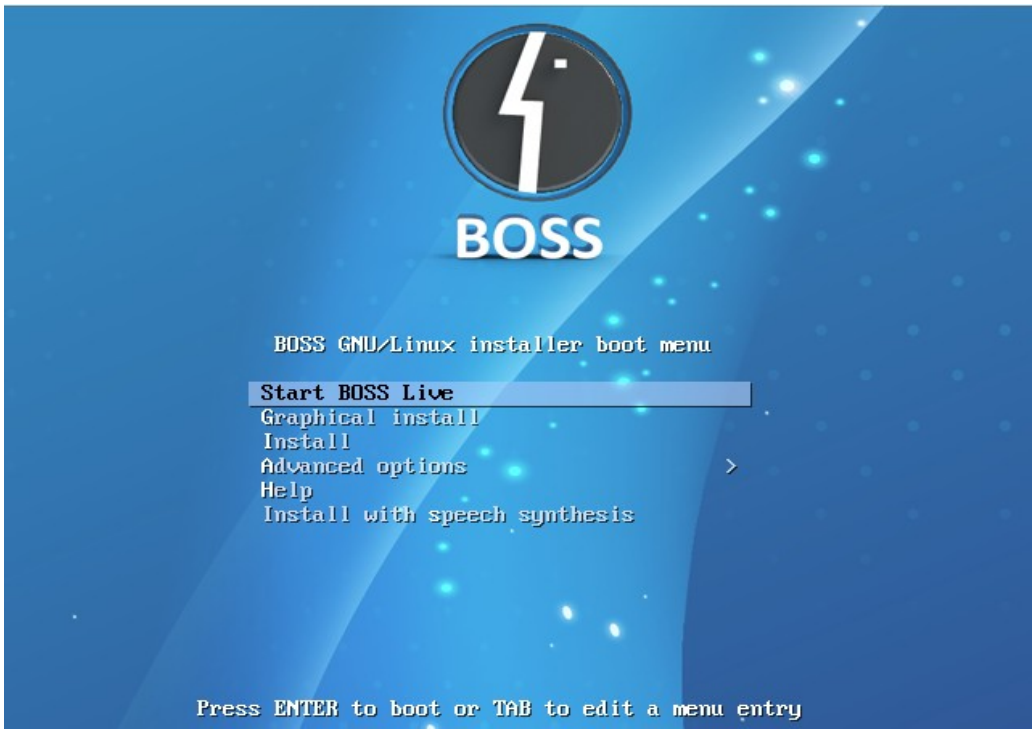


Figure 1. Boot Screen

2.3 Language Selection

The installation program displays a list of languages which are supported by BOSS GNU/Linux. Select the Language as “English” / “Tamil” / “Hindi” (or any other). Click “Continue” to proceed.

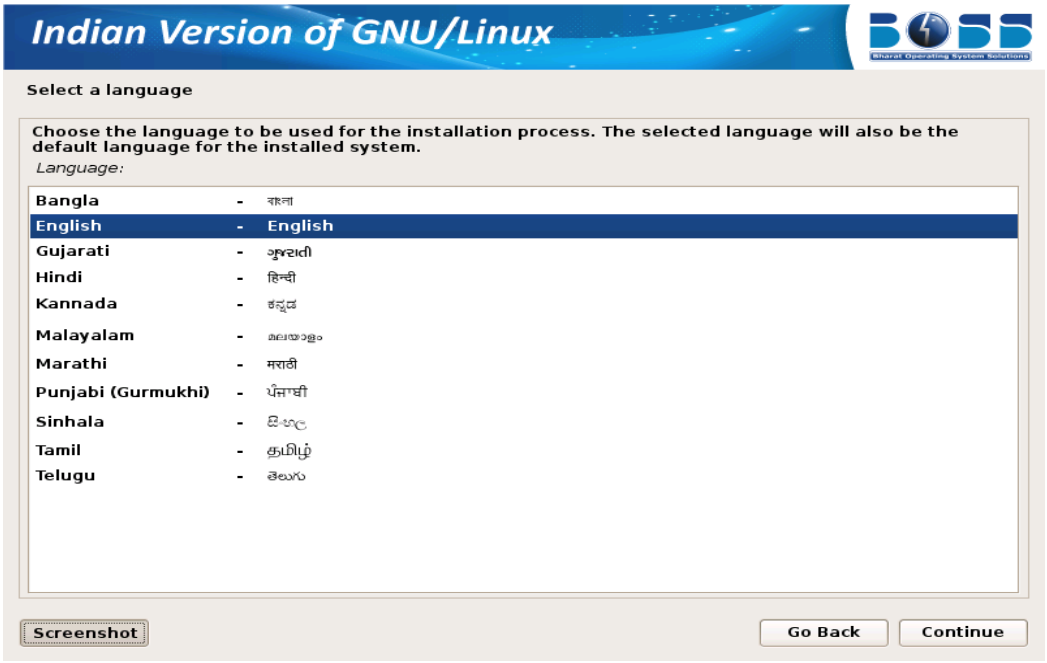


Figure 2. Language Selection Screen

2.4 Country Selection

Next the country selection screen appears. Select the appropriate country from the list. Click “Continue” and proceed further

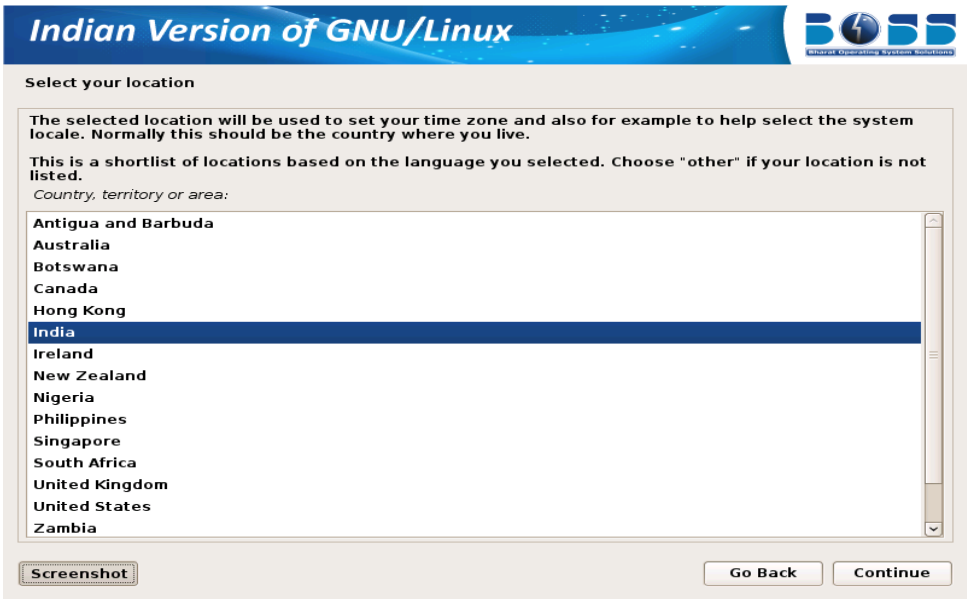


Figure 3. Country Selection Screen

2.5 Keyboard Configuration

The installation program displays a list of the keyboard layouts supported by BOSS GNU/Linux. Highlight the correct layout on the list, and select “Next”.

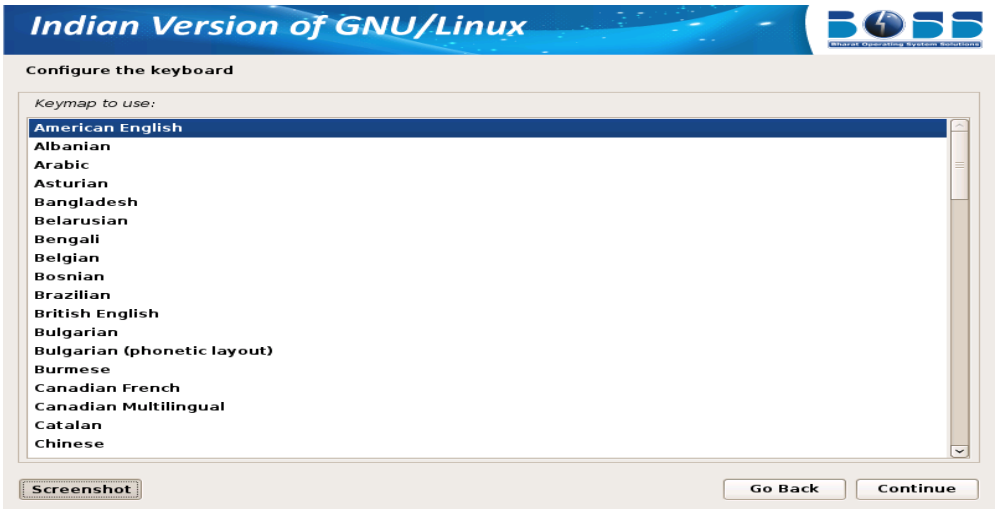


Figure 4. Keyboard Configuration Screen

2.6 Network Configuration

Configuring Network Automatically

If you have a DHCP Server, then the Network will be automatically configured. There is no need for the user to bother about the network configuration.

Configuring Network Manually

If that is not the case, you need to manually configure the network. When the DHCP server is not available, the following screen appears which means you need to configure manually.

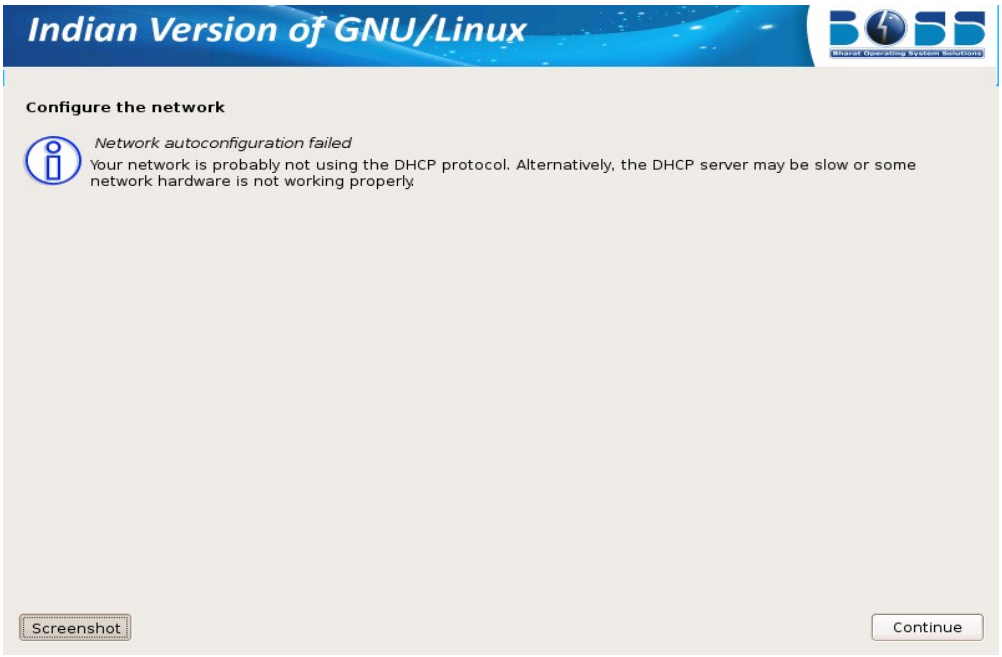


Figure 5.1 Network Configuration

Click on “Continue” to proceed towards Manual Network configuration.

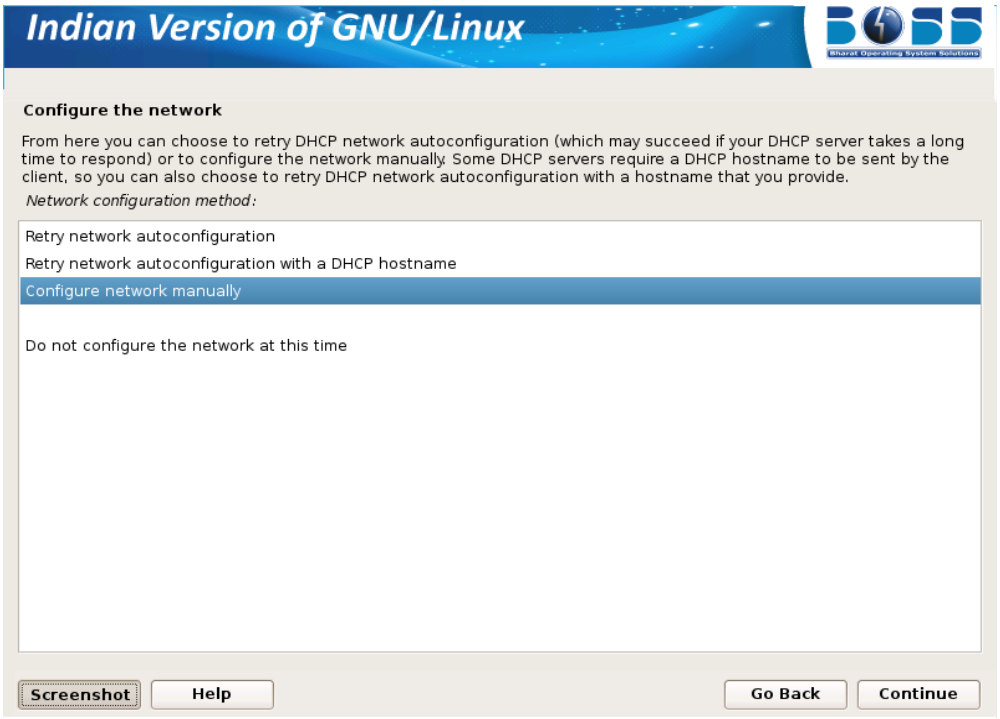


Figure 5.2 Network Configuration

Select “Configure Network Manually” and set the IP address and configure network.

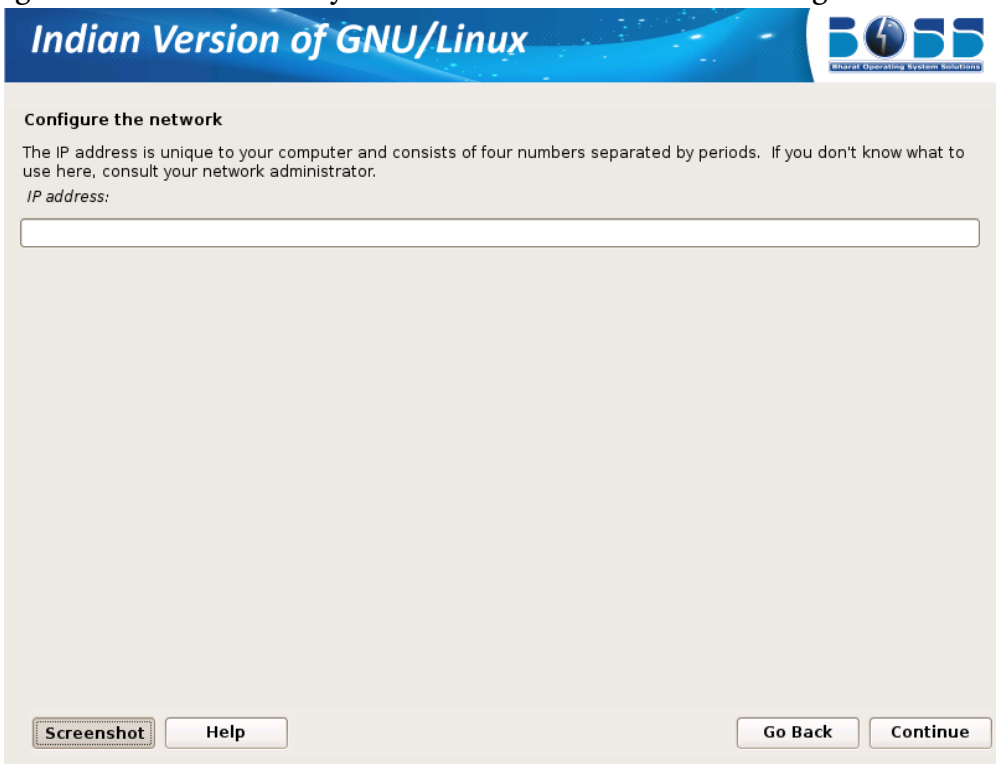


Figure 5.3 Network Configuration

The screen shots are as follows:

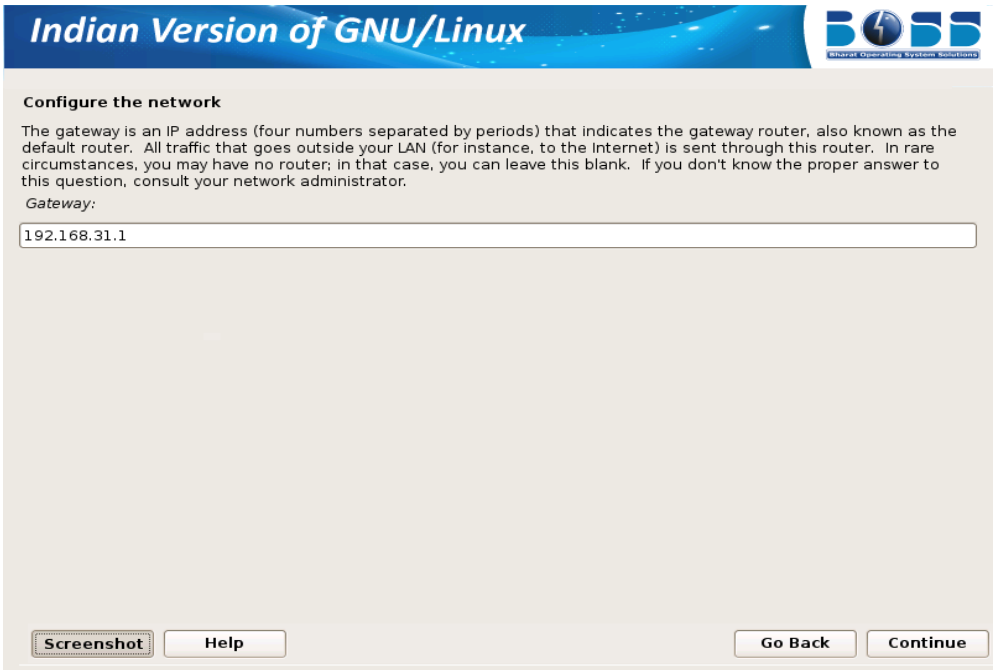


Figure 5.4 Network Configuration

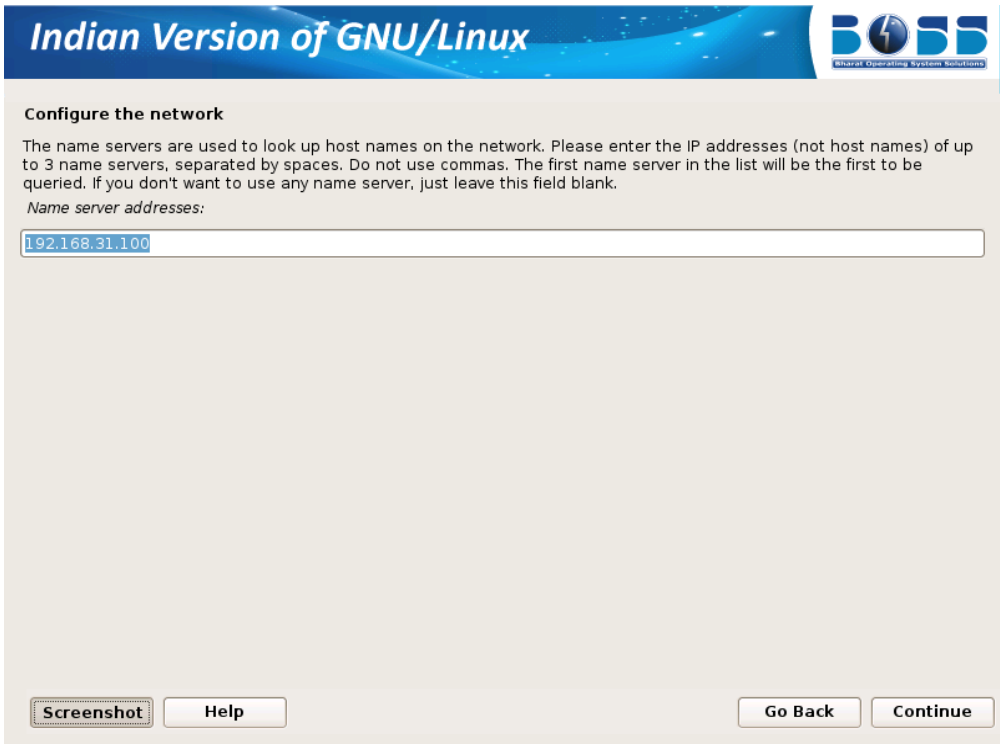


Figure 5.5 Network Configuration

The next screen will ask you to enter the hostname for the system.

2.7 Disk Partitioning Setup

If you are new to Linux, you may want to use the automatic partitioning method. If you are a more experienced Linux user, use the manual partitioning method for more control over your system configuration, or select and modify the automatically defined partitions.

The screen below shows the way you would like to partition. These are the following ways in which you can partition the hard disk

a) Automatic partitioning

b) LVM partitioning

c) Manual partitioning.

a) Automatic Partitioning

By selecting automatic partitioning, you will not have to use partitioning tools to assign mount points, create partitions or allocate space for your installation.

You will be provided with two options in automatic partition -

- Format entire Hard Disk
- Use Existing Hard disk Space

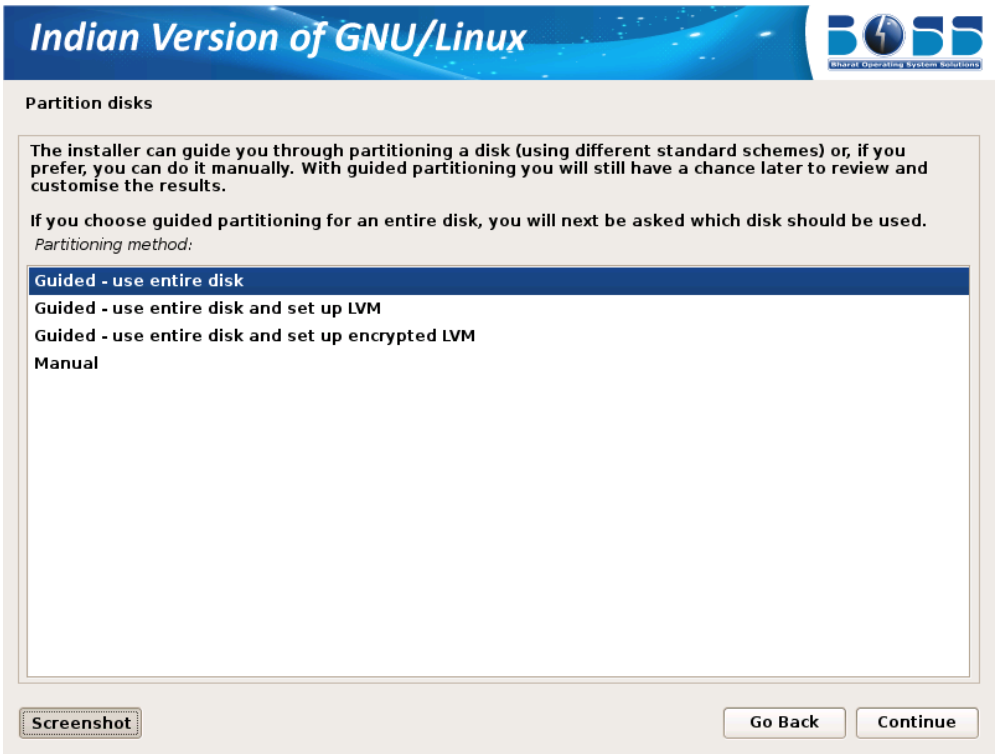


Figure 6.1 Format Entire Hard Disk

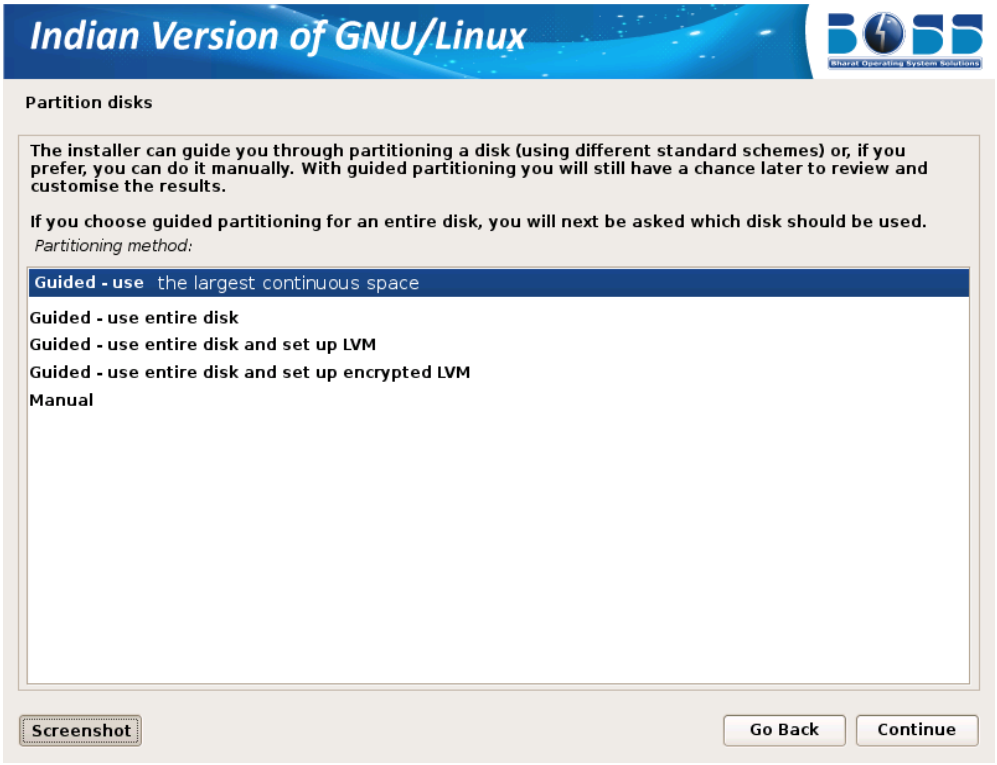


Figure 6.2 Use the largest Free Space Available

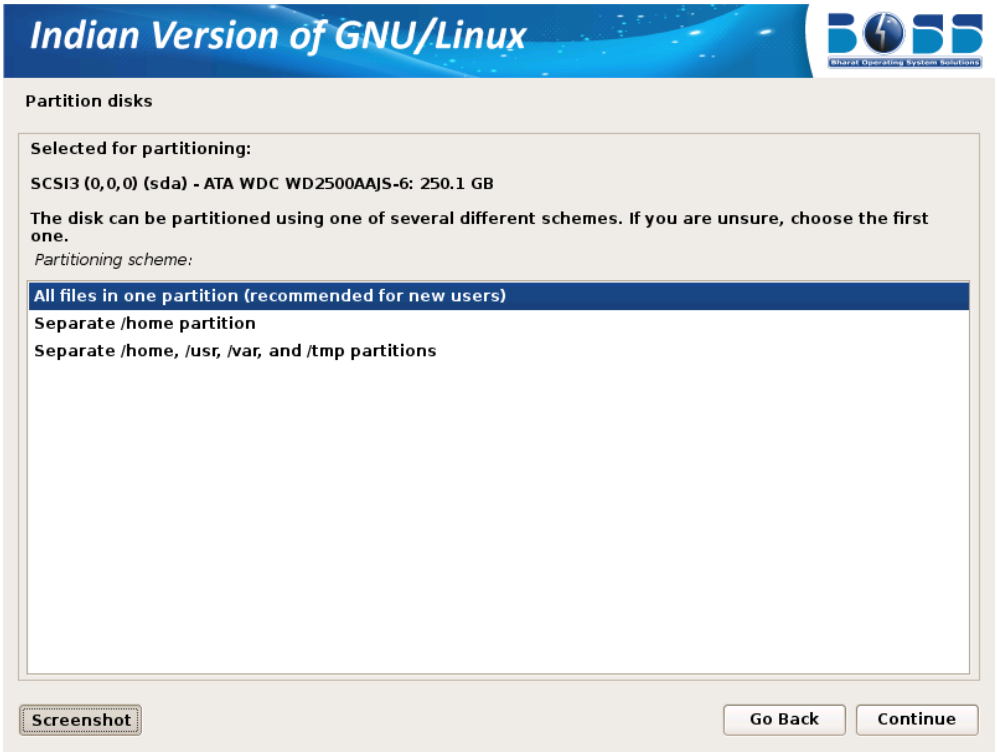


Figure 6.3 Allot the space for different directories

b) LVM partitioning

LVM is a tool for logical volume management which includes allocating disks, resizing logical volumes. The Logical Volume Manager (LVM) enables flexible distribution of hard disk space over several file systems. As it is difficult to modify partitions on a running system, LVM was developed. It provides a virtual pool (Volume Group — VG for short) of memory space from which logical volumes (LV) can be generated if needed. The operating system accesses these instead of the physical partitions.

The screen shots are as follows:

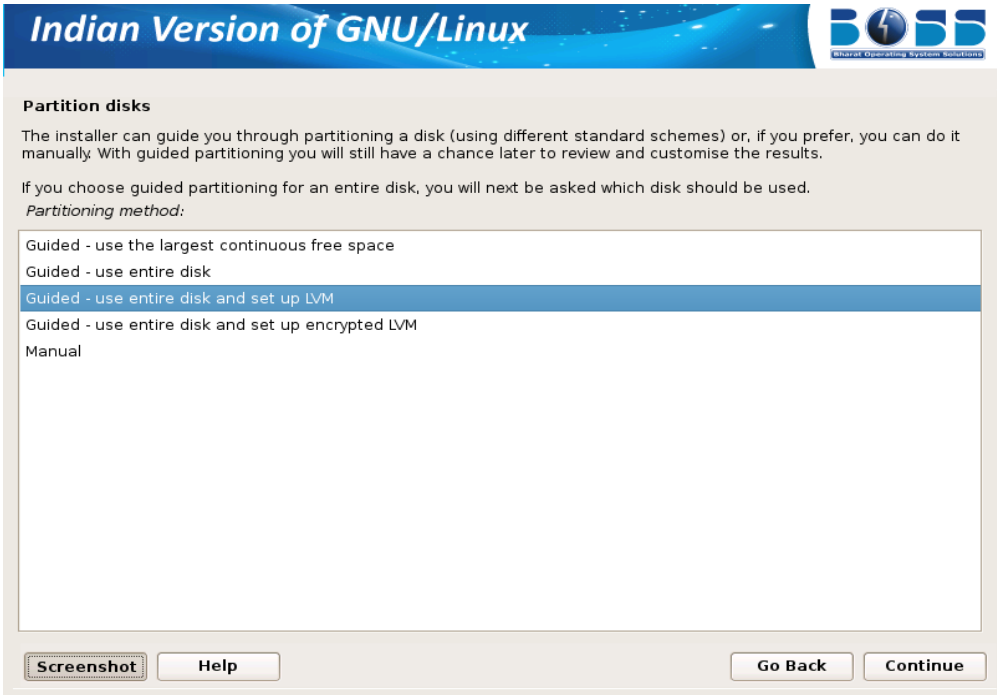


Figure 6.4 LVM Partitioning

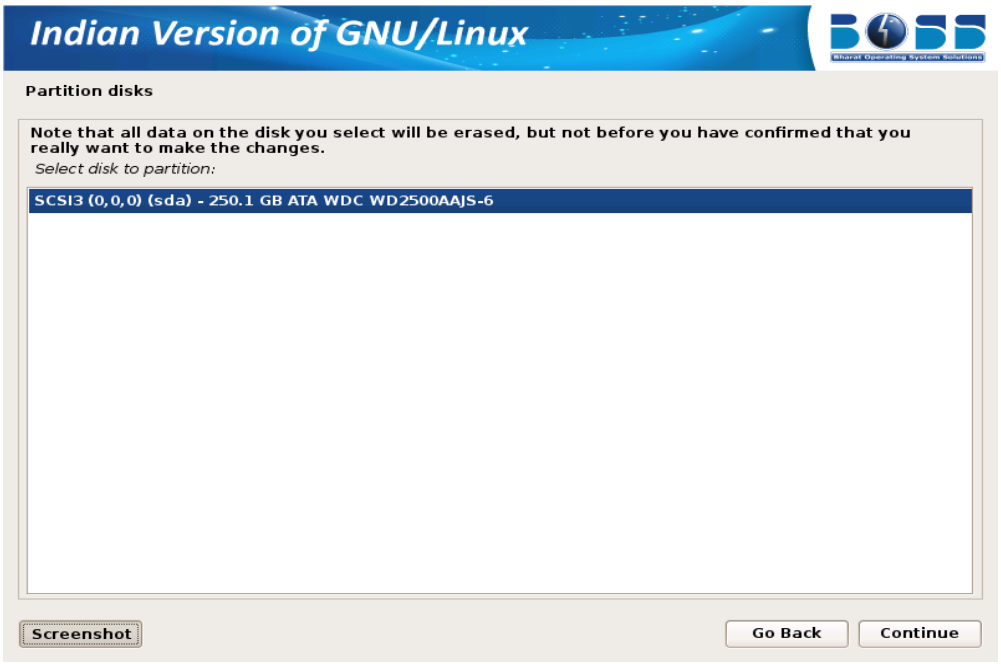


Figure 6.5 Select the disk to partition

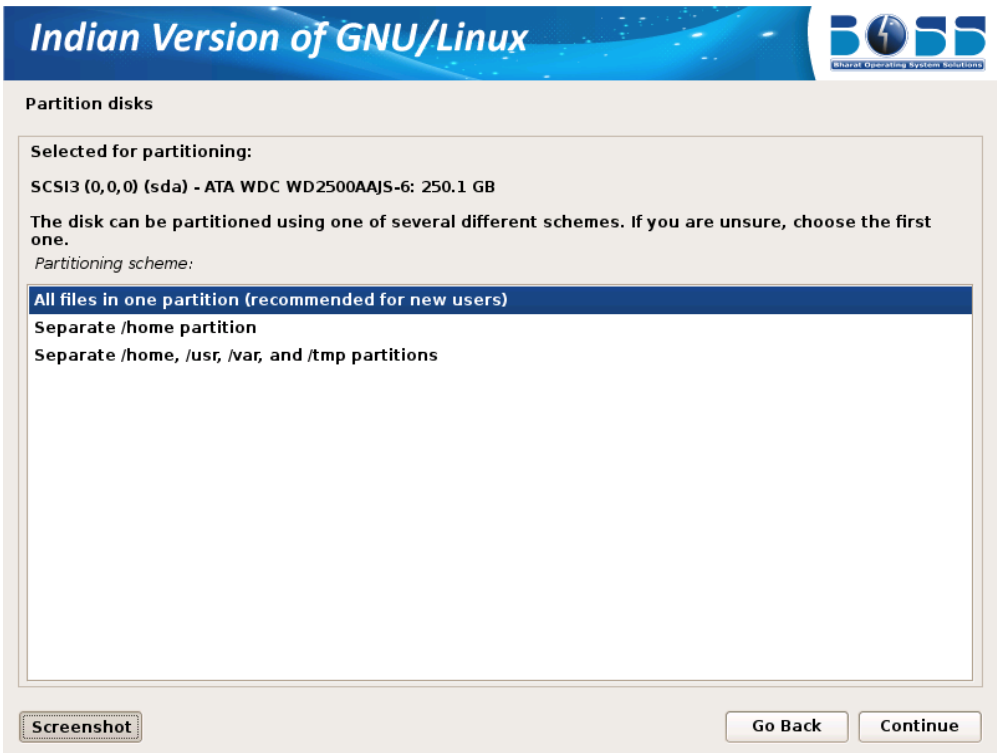


Figure 6.6 LVM Partitioning

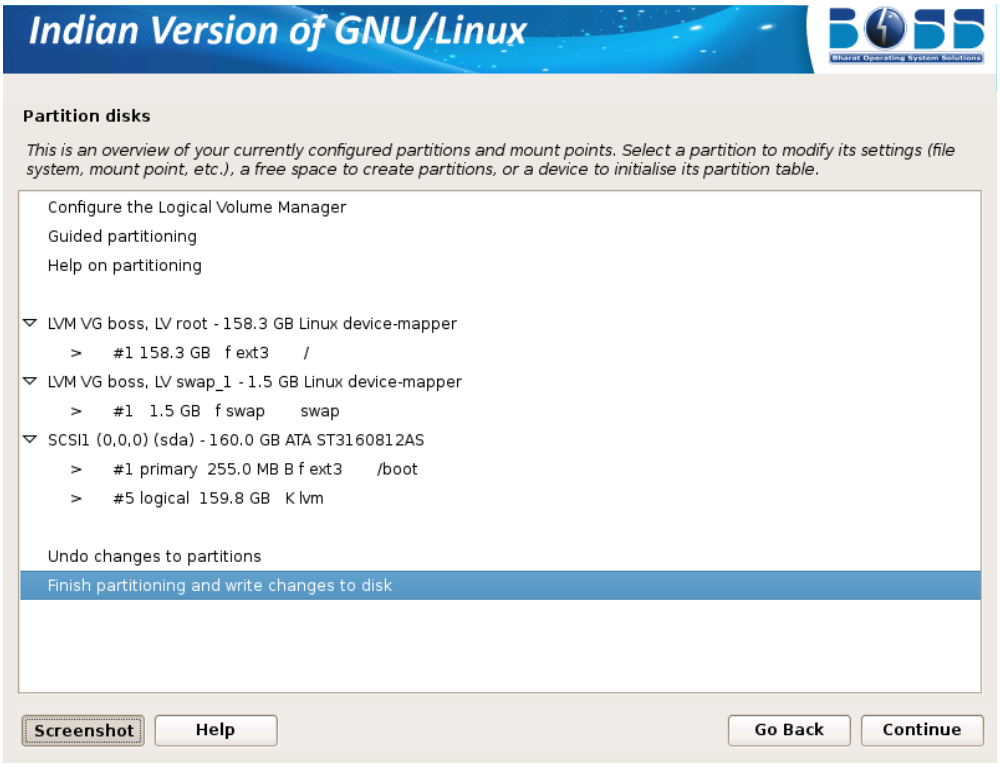


Figure 6.7 Finish Partitioning

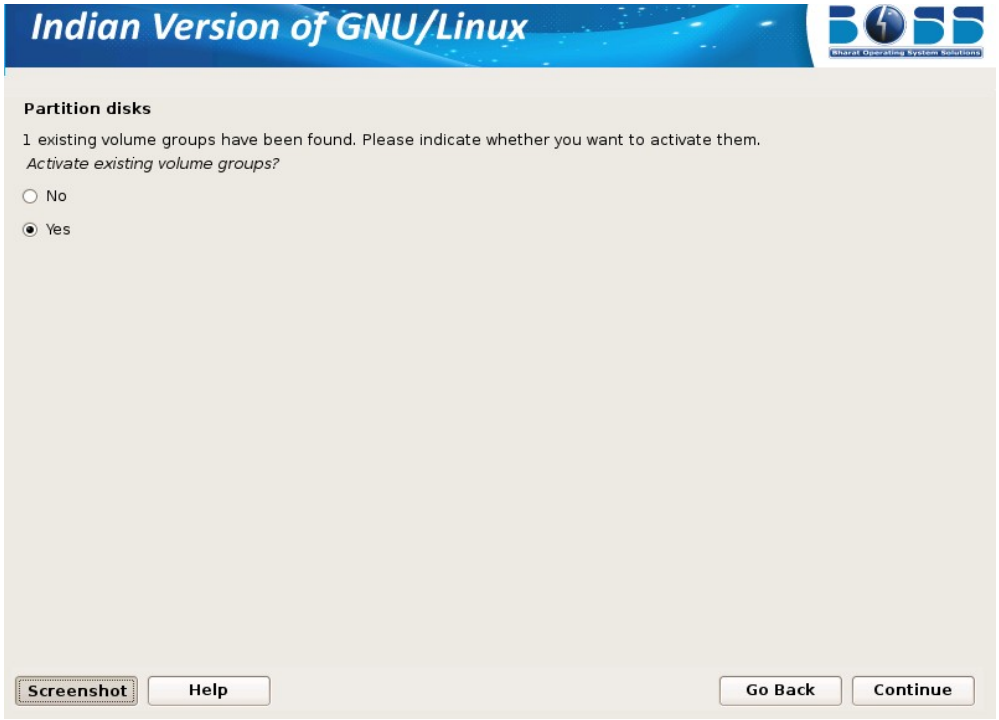


Figure 6.8 LVM Partitioning

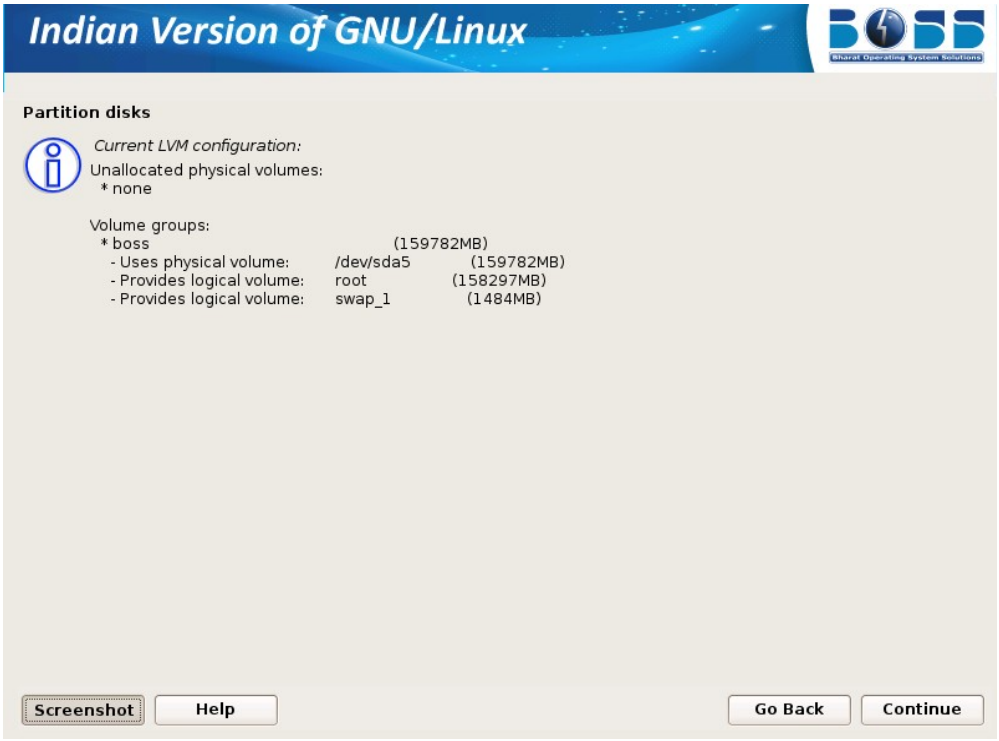


Figure 6.9 LVM Partitioning

Use Existing Hard disk Space

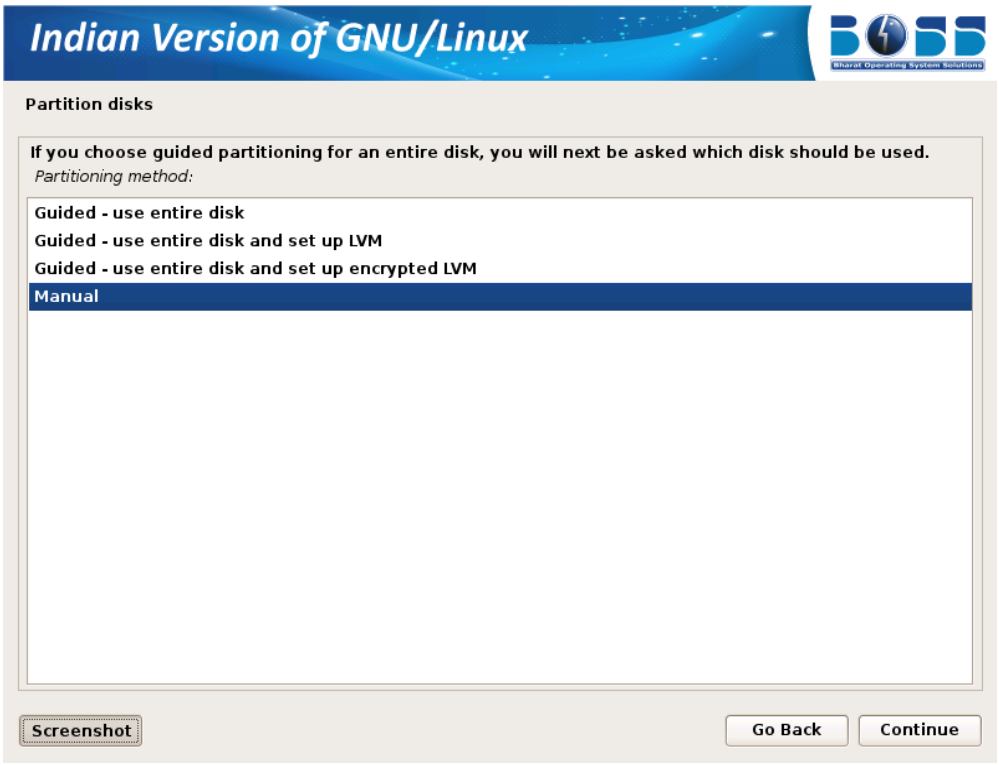
This means that you need to have an empty unpartitioned free space which is not used for any other OS like Windows or Linux. Once you select this option it will ask you for the partition space details and then format it, later the installation proceeds.

c) Manual Partitioning

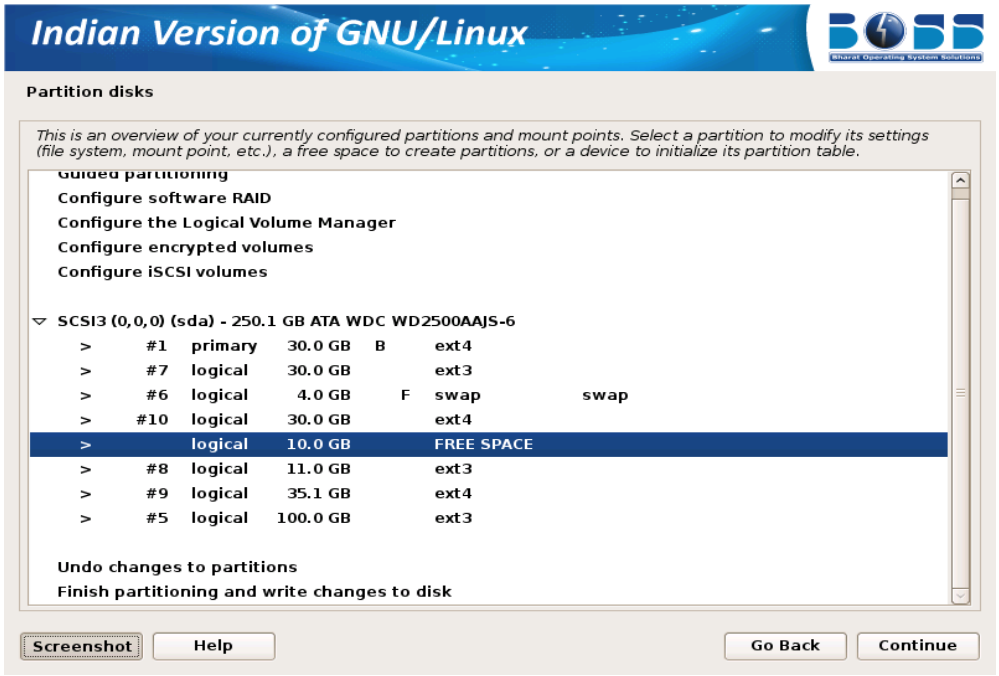
Creating a new partition

To partition manually , the following screen shots will help you setting up the partition.

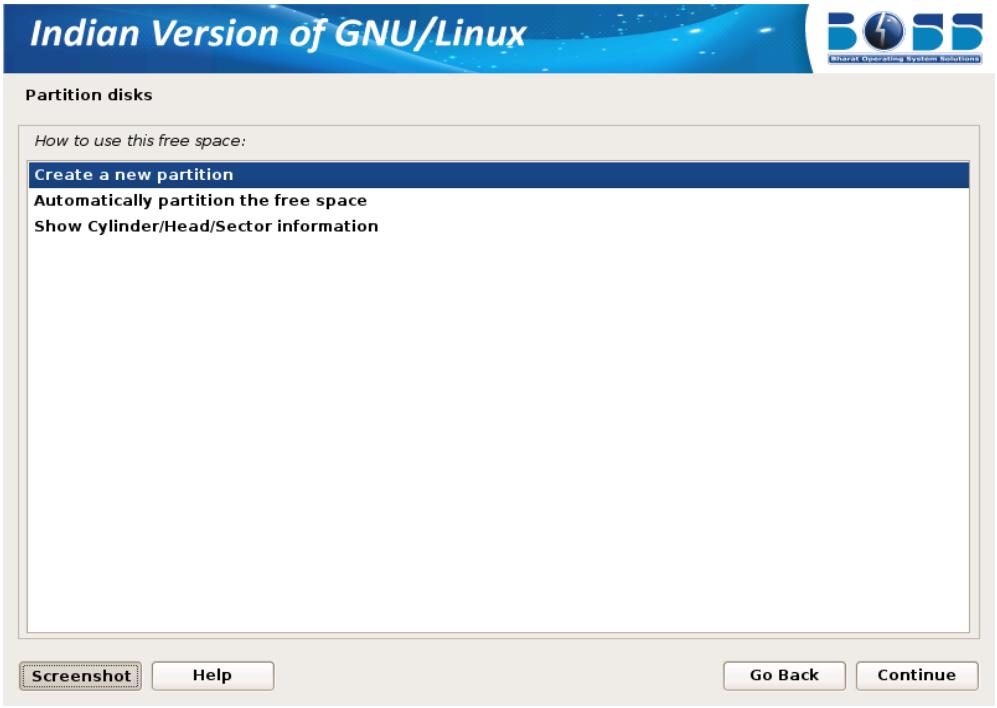
1. A screen with name “Partition disks” will be displayed. In that click “Manual” and then click “Continue.”



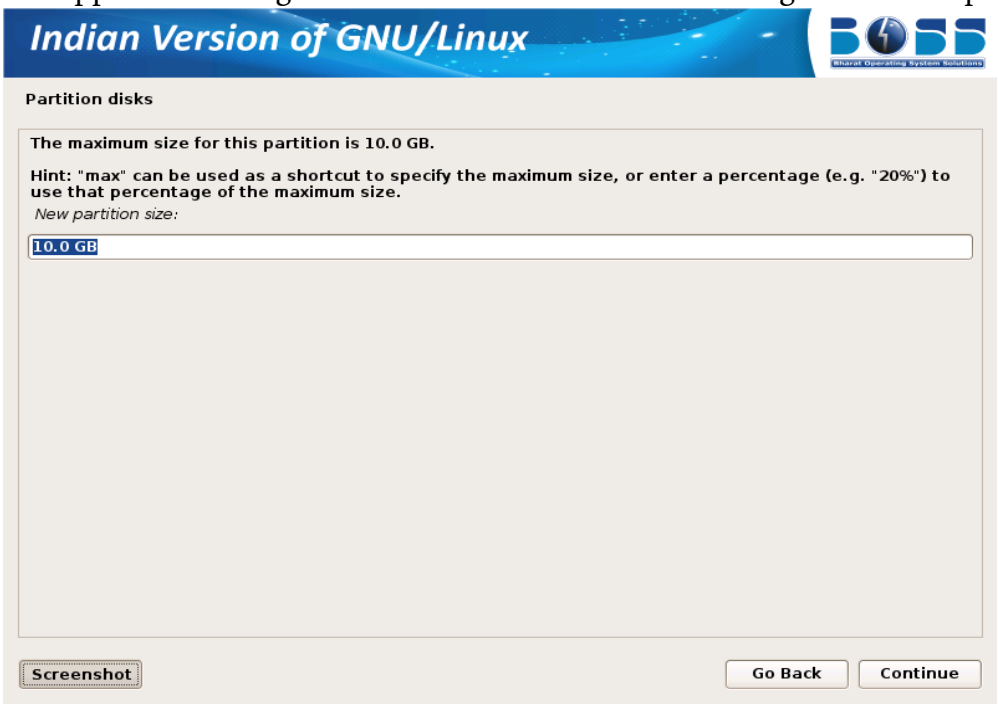
2. After clicking “Manual” a screen will be displayed which contains overview of your currently configured partitions. Click on free space and then click “Continue”.



3. Create new partition for BOSS GNU/Linux by double clicking “Create a new partition”

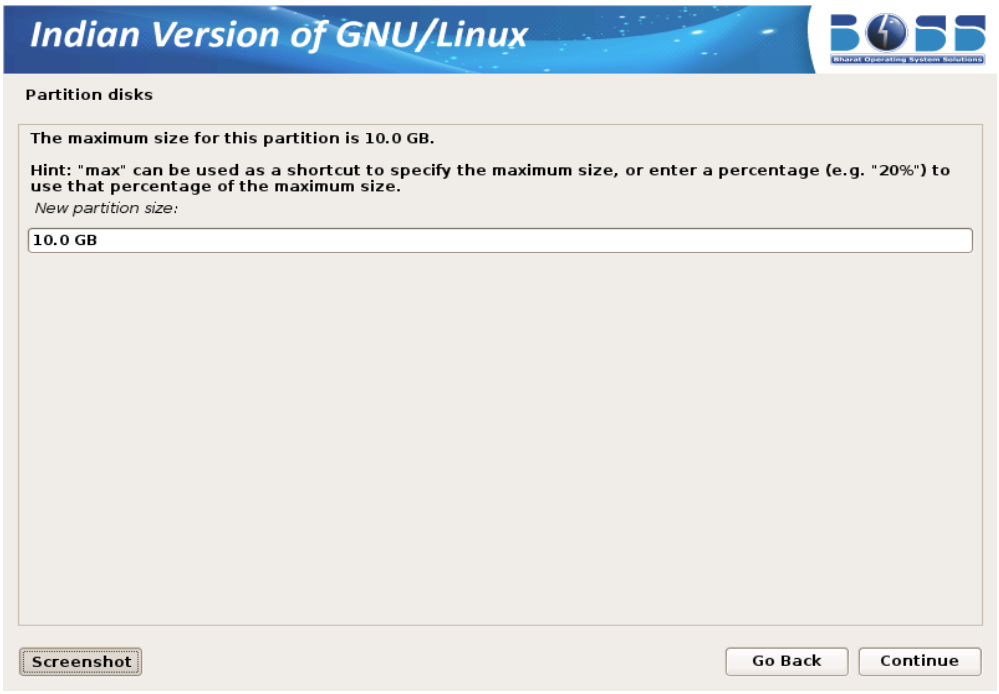


4. A screen appears showing the maximum size that can be assigned for this partition.

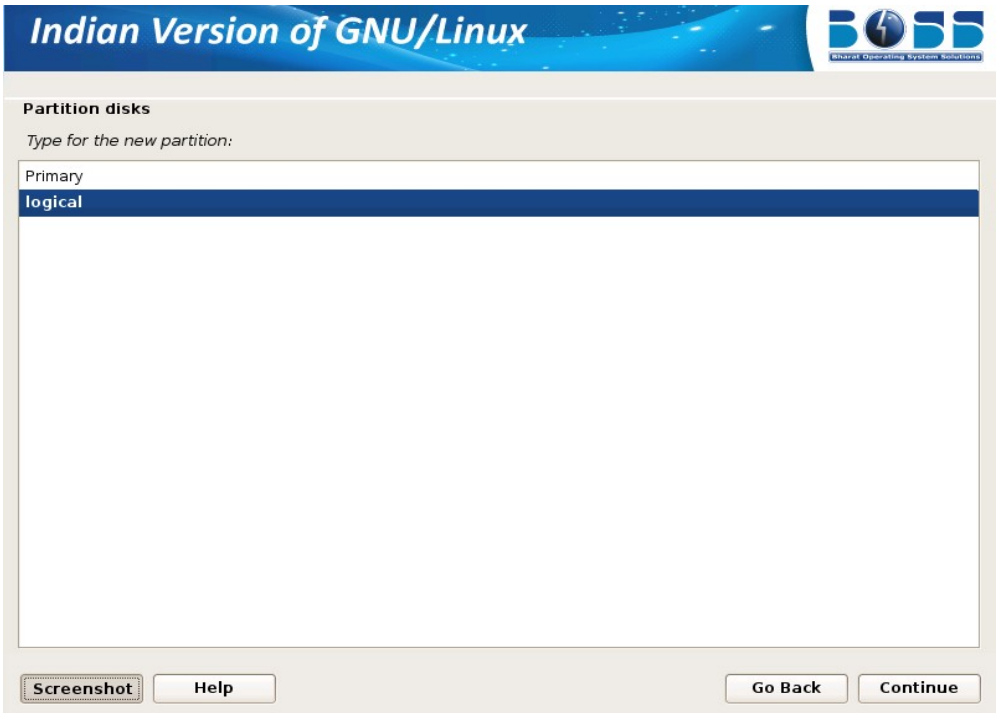


In this screen change the size to your required size. The minimum should be 10.0 GB.

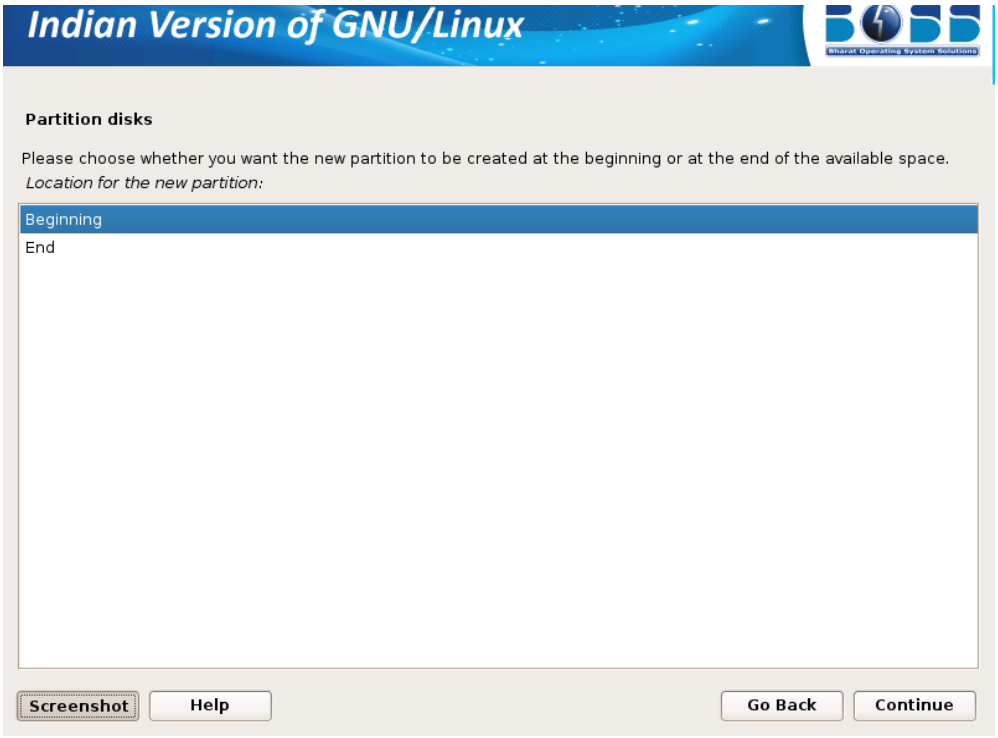
Then click “Continue”.



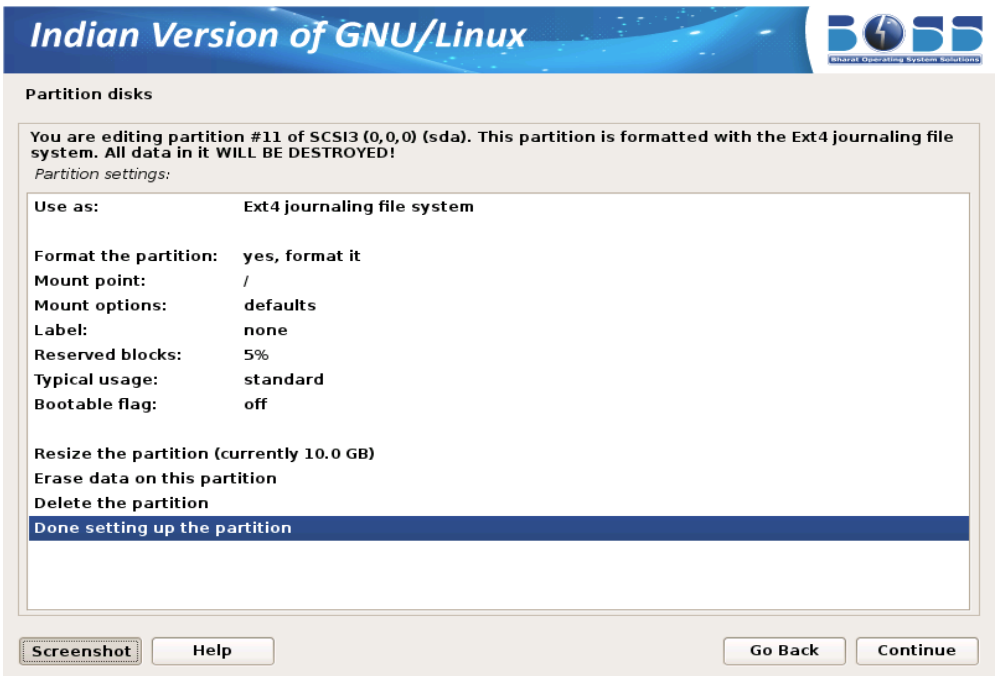
5. Select the type for the new partition.



6. Specify whether the partition should be at the beginning or at the End.

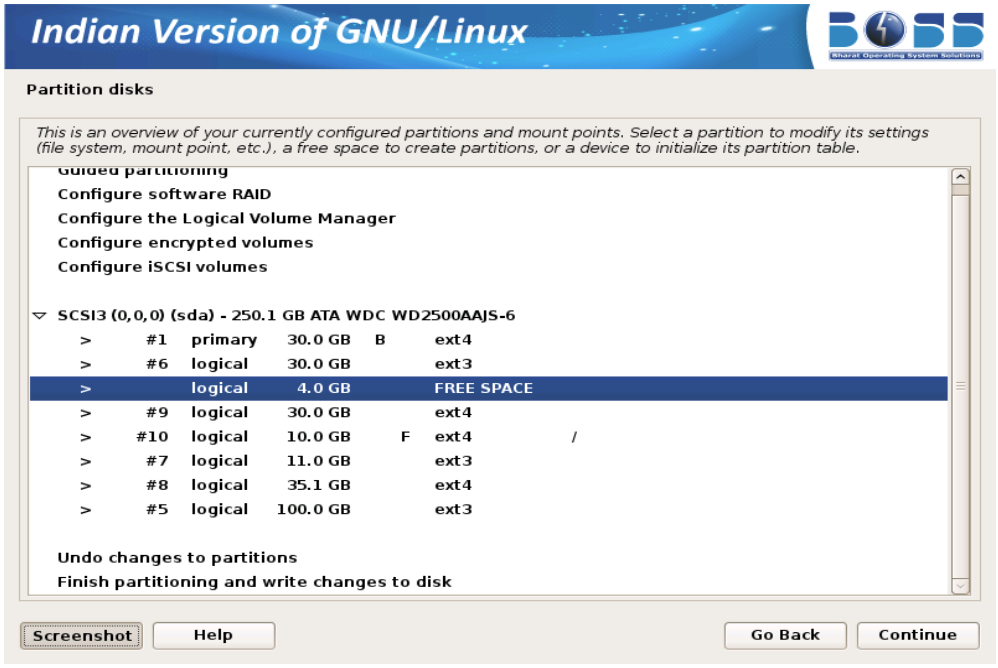


7. Click “Done setting up the partition” and then click “Continue”.



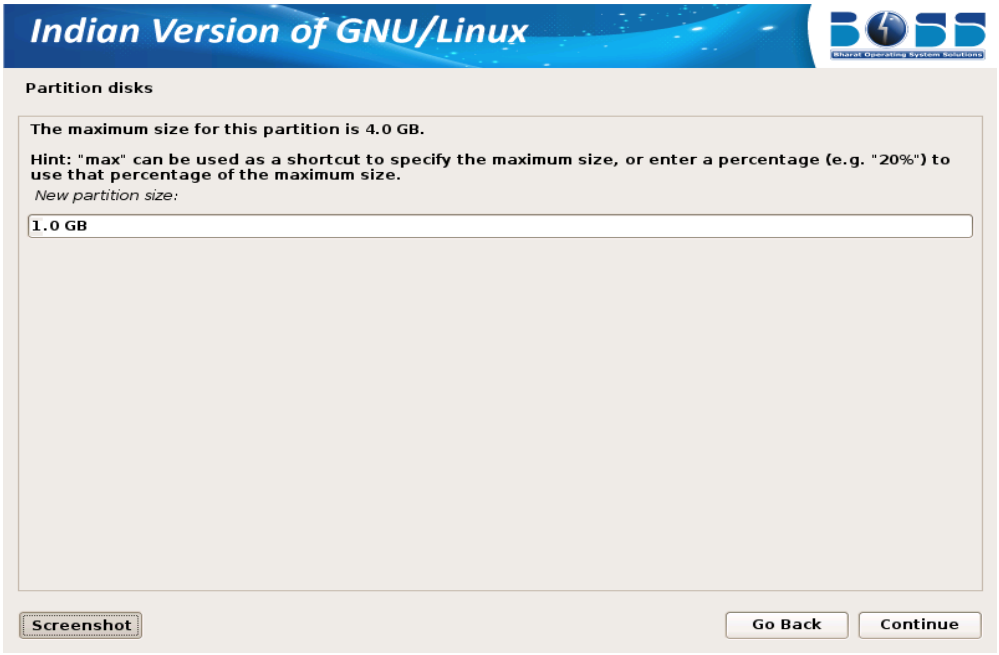
After selecting the partition for the "/", you need to select a partition for the "swap" space. If you are already having Linux installed on your system then you will be having a swap space in your system. If so no need of another swap space. The swap should be double the RAM size. If there is no swap space then create a new swap space. The screen shots are as follows:

8. Create a swap area of 1 GB from free space.

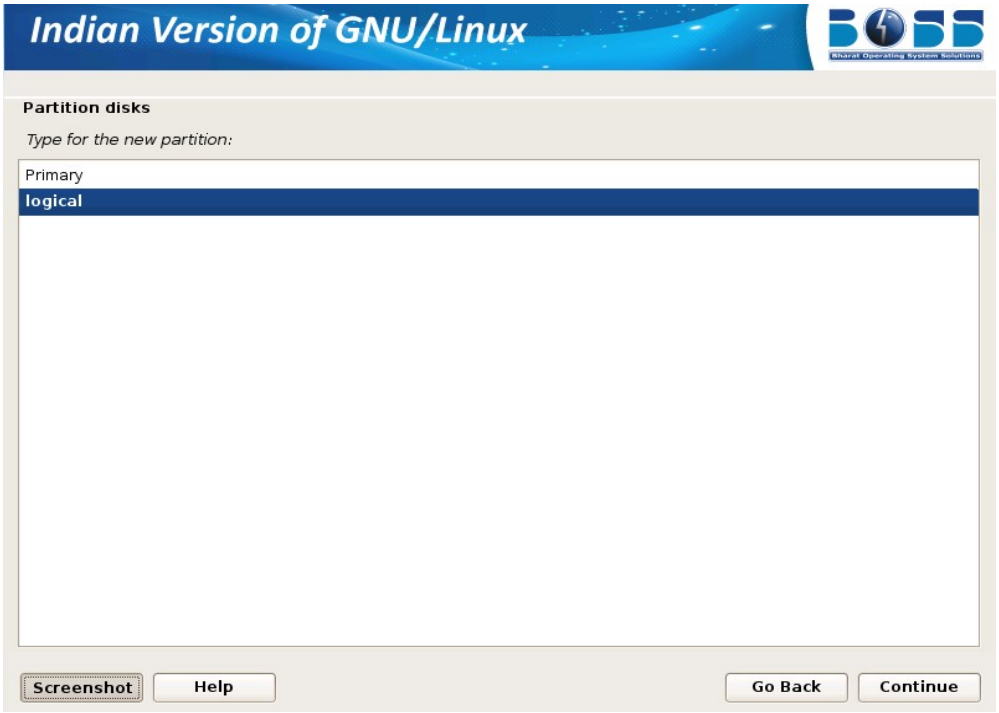


9. Click "Create a new partition" and then click "Continue".

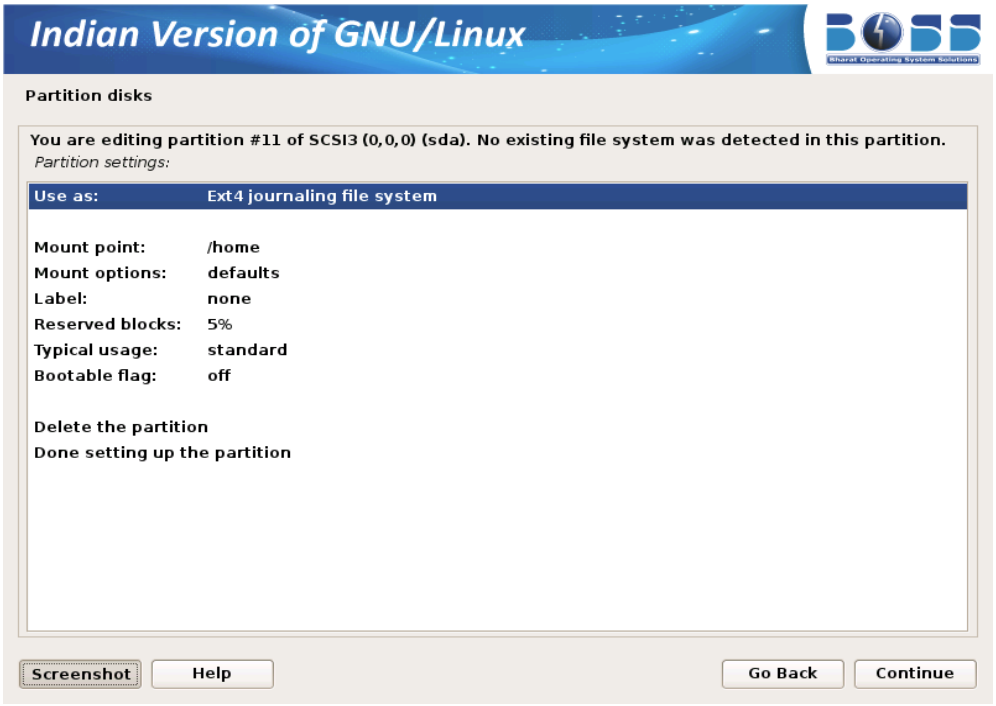
10. Specify the partition size for swap area as 1.0 GB.



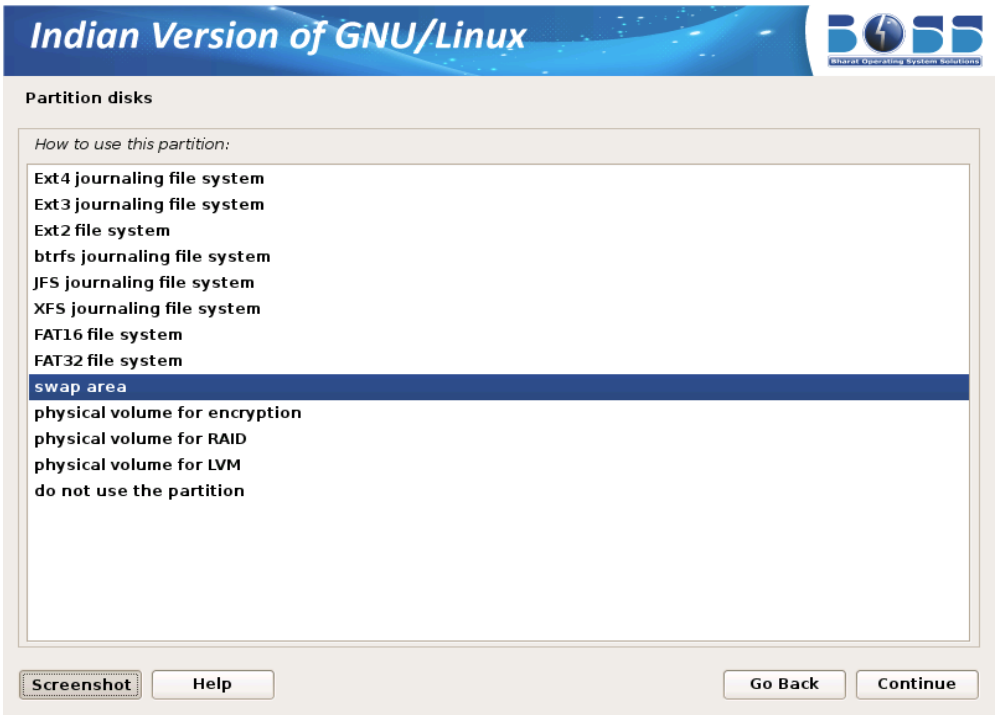
11. Select the type for the new partition.
12. Specify whether the partition should be at the beginning or at the End.



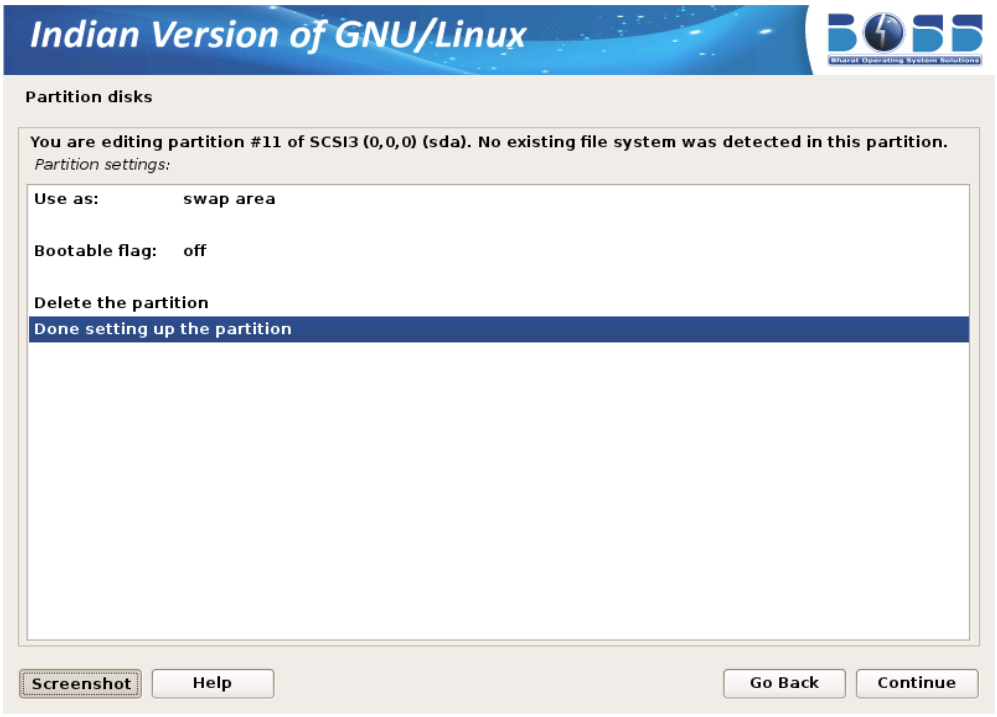
13. Change default file system ext4 to swap by double clicking “Ext4 journaling file system” in the screen shown below.



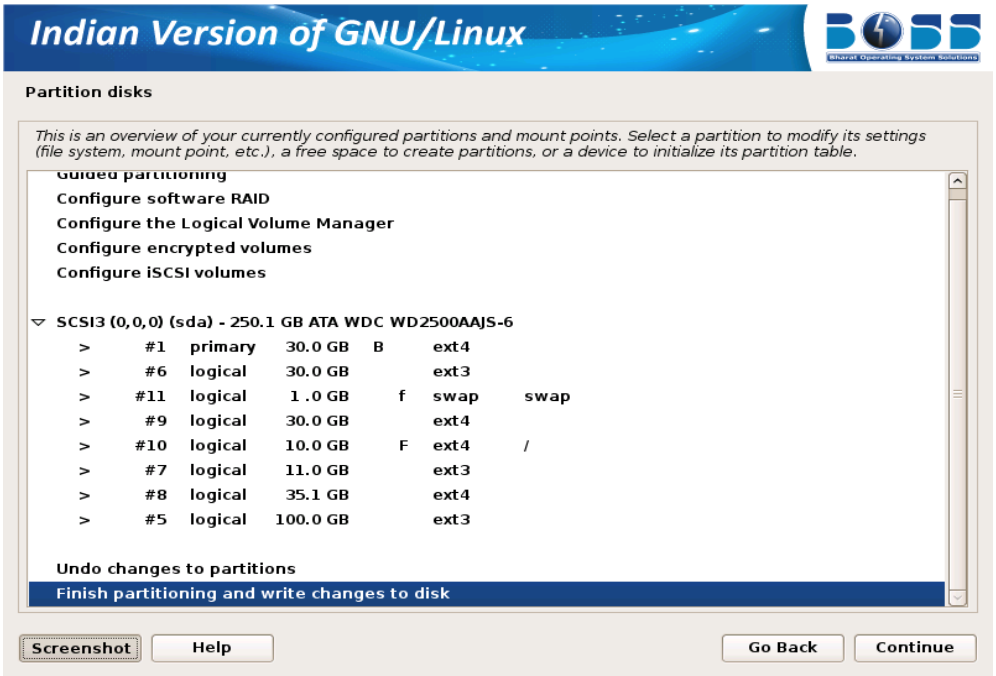
14. Double click “swap area”.



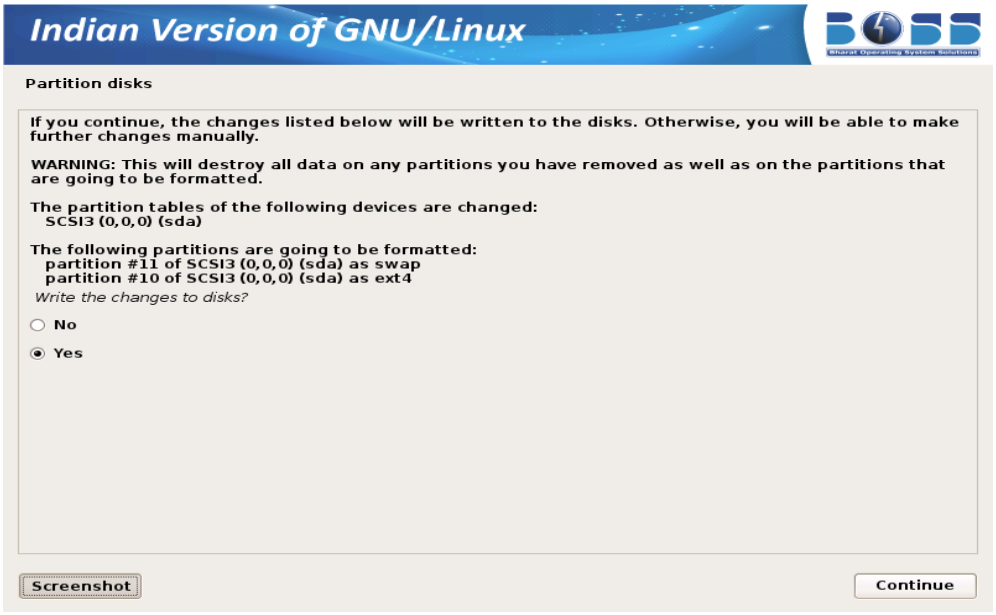
15. Creation of swap area is completed. Click “Done setting up the partition” and then click “Continue”



16. Finish the partitioning process.



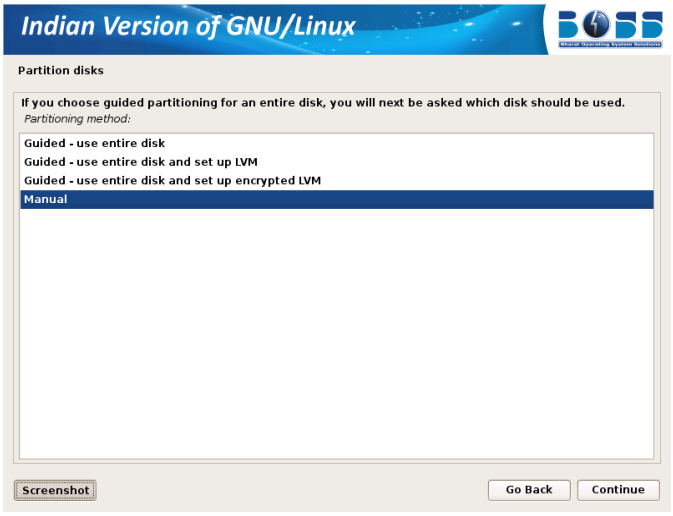
17. Write the changes to disk by clicking “Yes”.



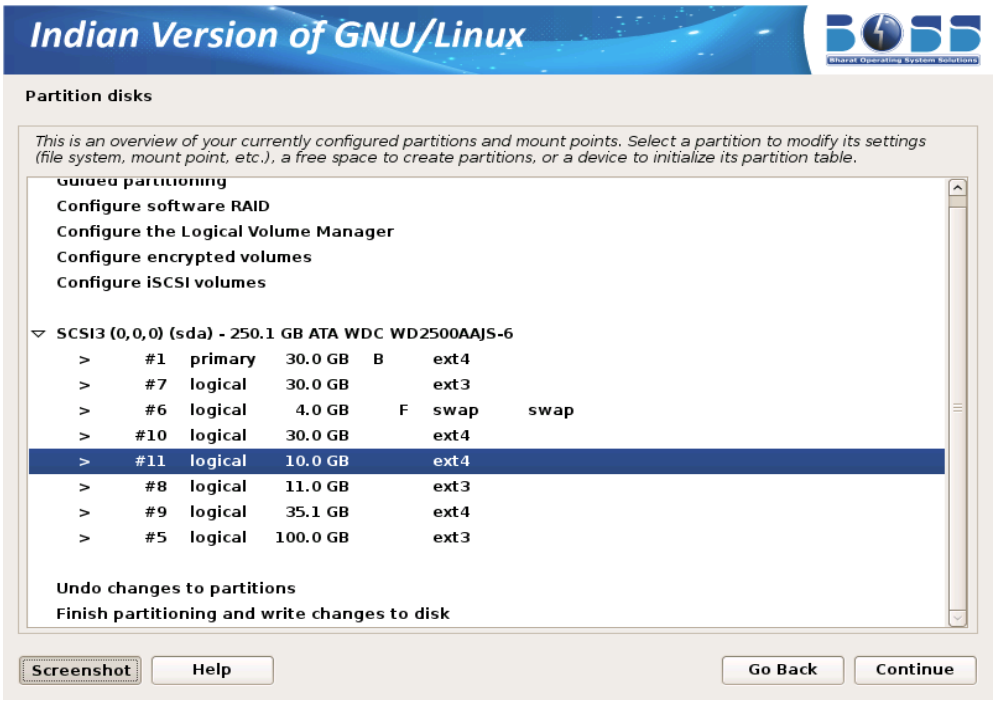
Deleting the hard disk partition

To partition manually , the following screen shots will help you setting up the partitioning separately for “/” and “swap”.

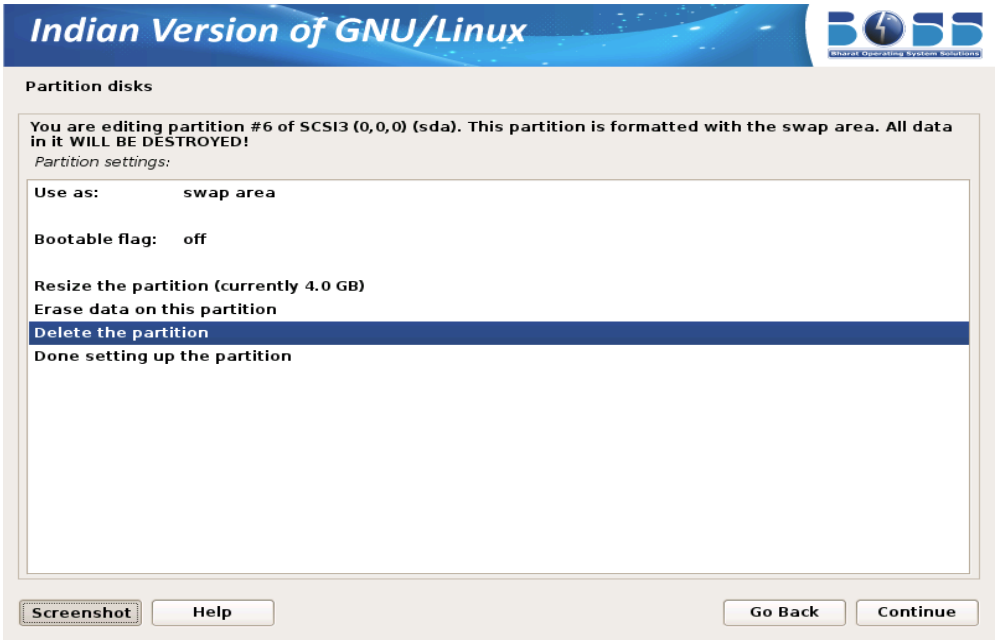
1. A screen with name “Partition disks” will be displayed. In that click on “Manual” and then click on “Continue.”
2. After clicking “Manual” a screen will be displayed which contains overview of your currently configured partitions and mount points.



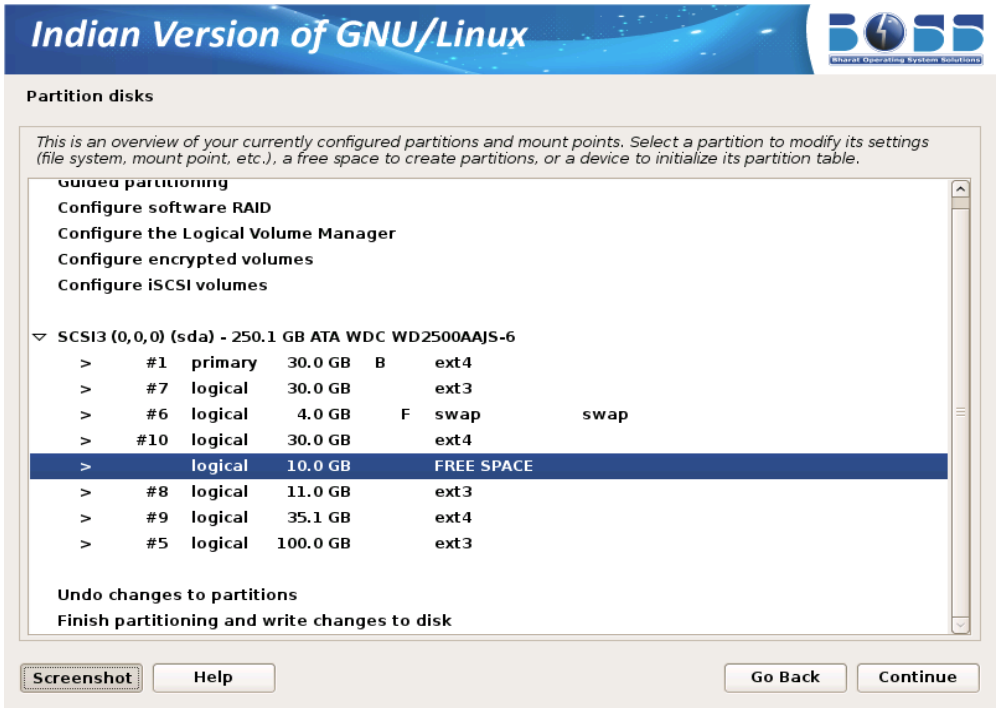
Then click on partition which you want to delete and then click “Continue”.



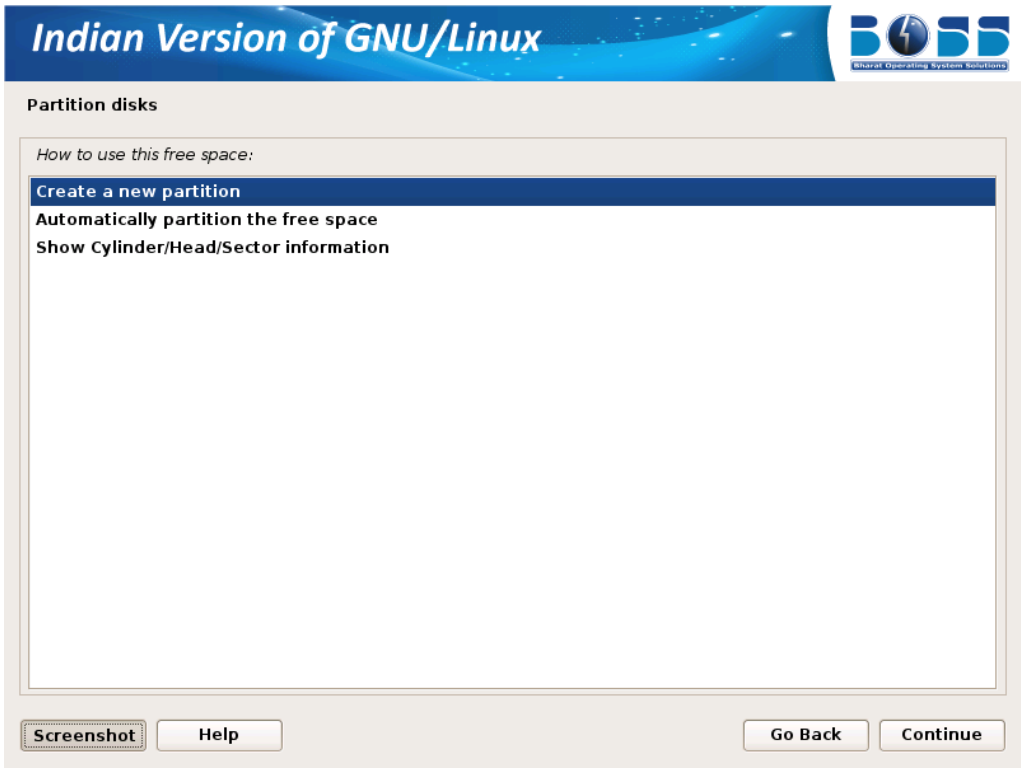
3. Click on “Delete the partition” and then click “Continue”.



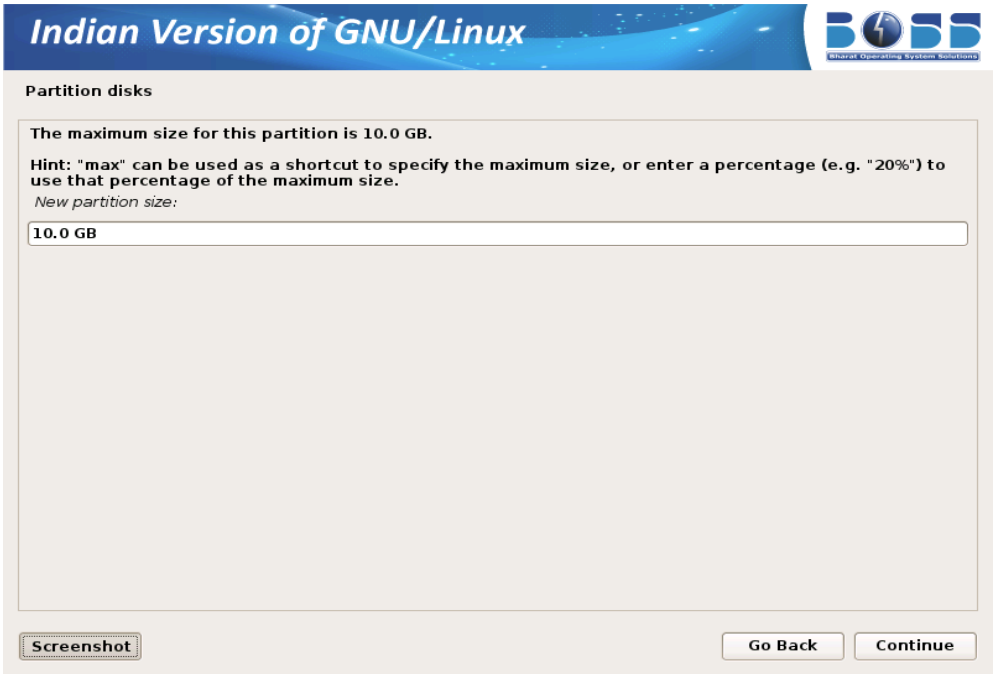
4. Once that partition is deleted you will get some free space.



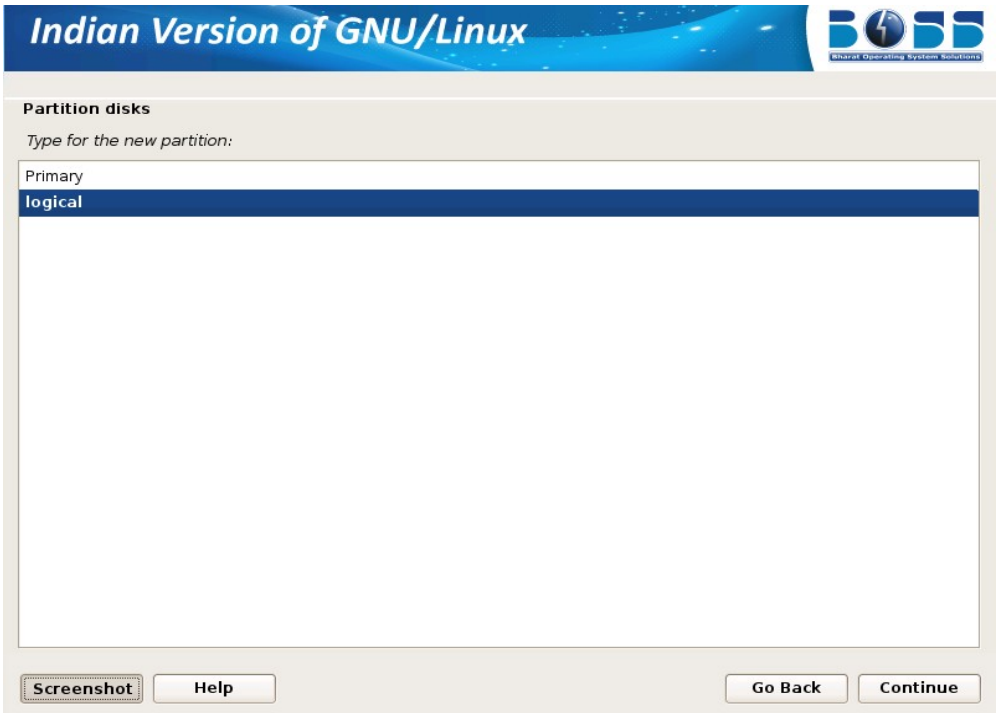
5. To create a new partition using that free space double-click on “Create a new partition”.



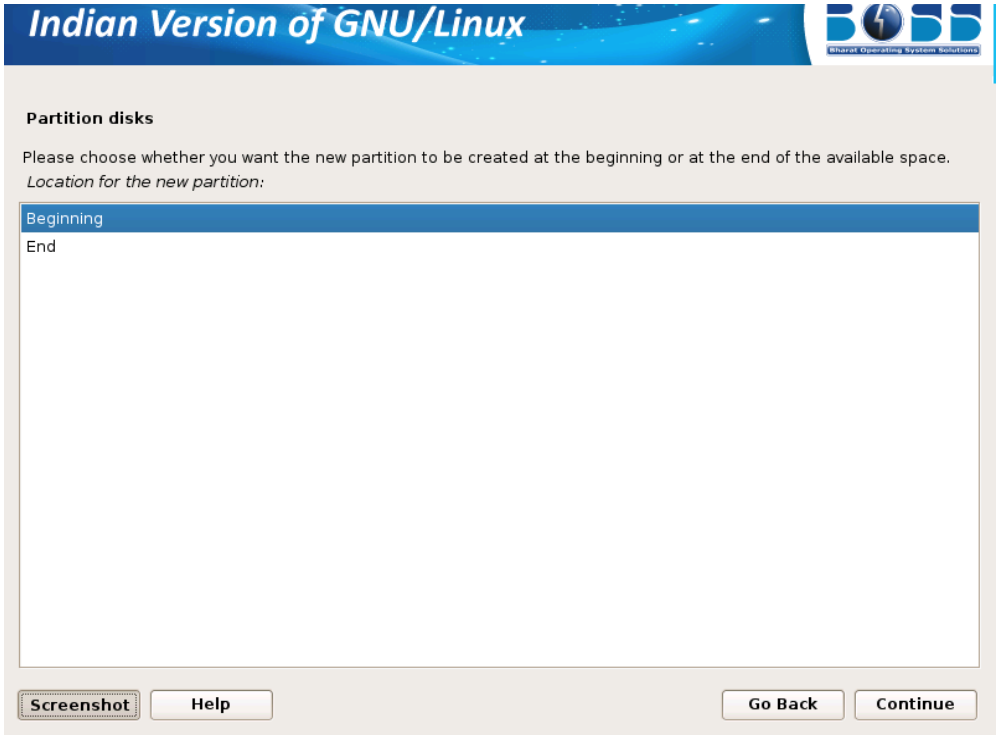
6. In the next screen specify the new partition size. The minimum size should be 10.0GB.



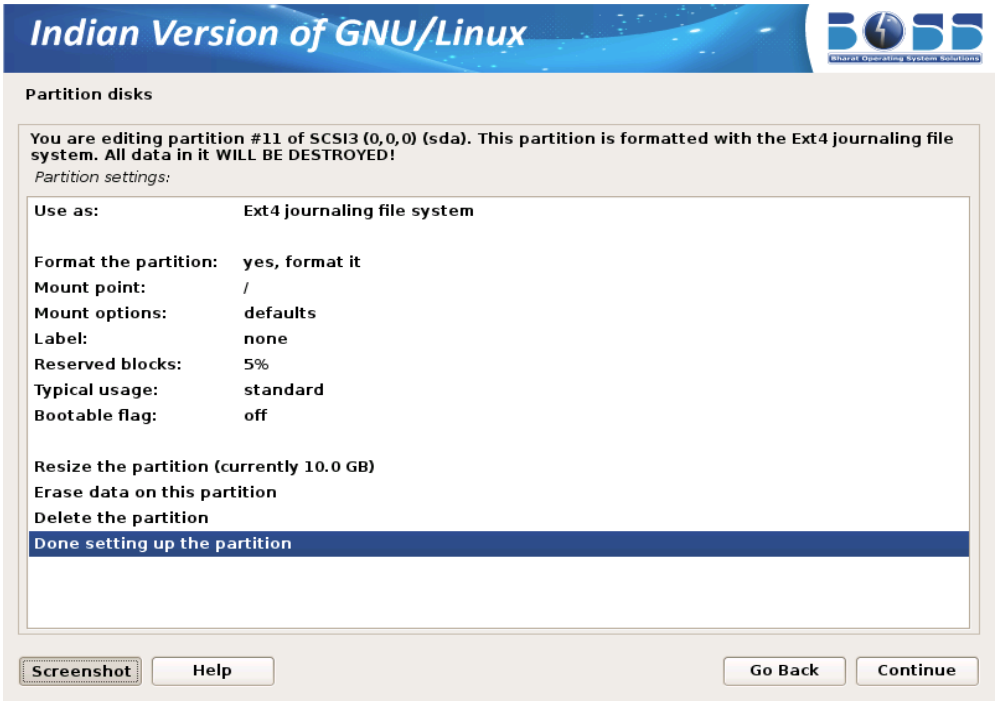
7. Select the type for the new partition.



8. Specify whether the partition should be at the beginning or at the End.

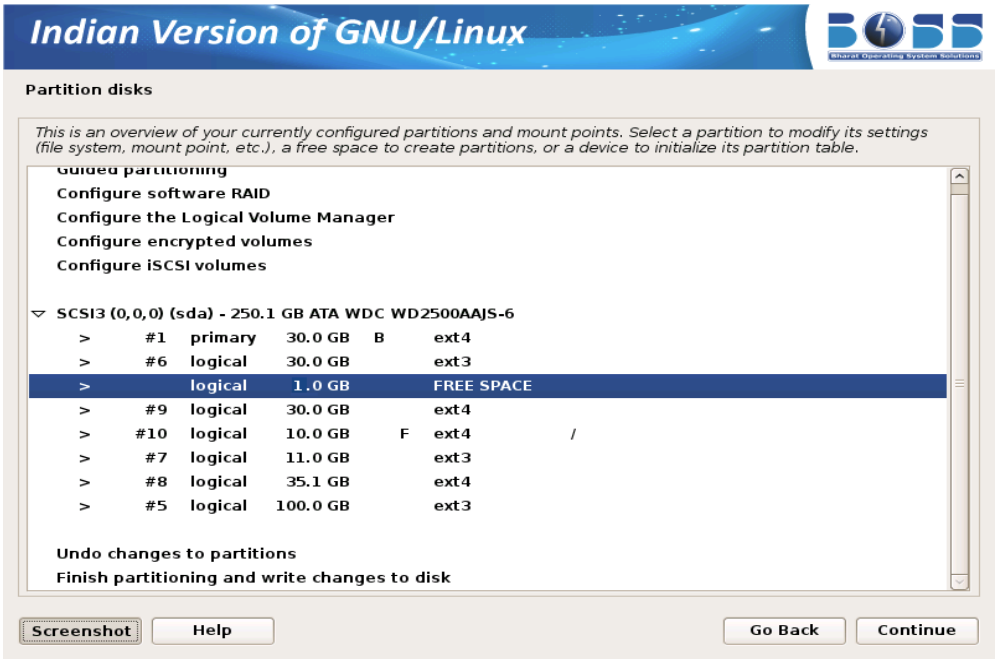


9. Click “Done setting up the partition” and then click “Continue”.

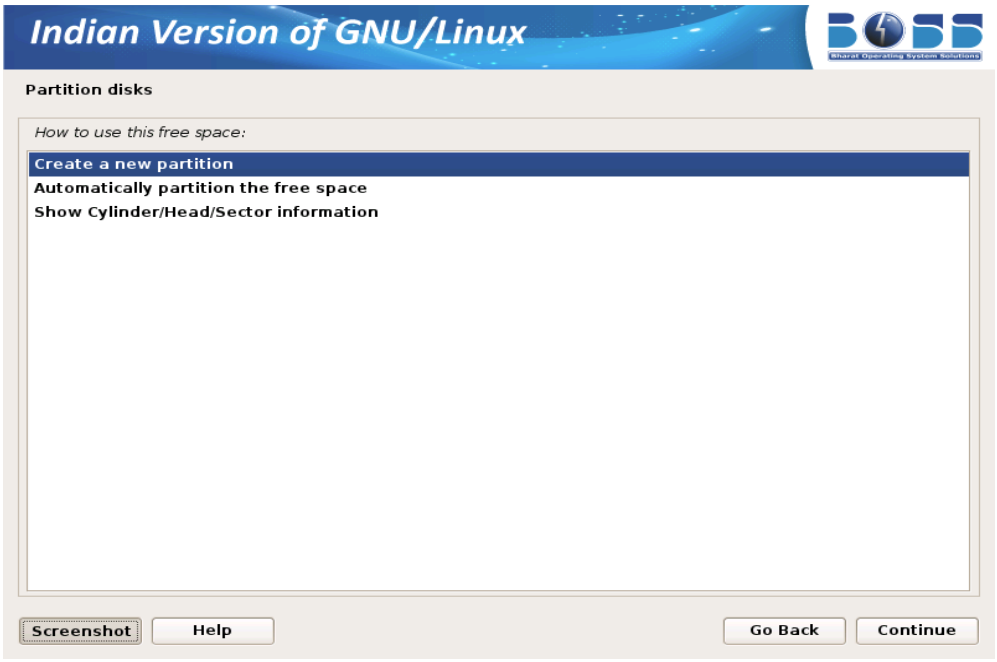


After selecting the partition for the “/”, you need to select a partition for the “swap” space. If you are already having Linux installed on your system then you will be having a swap space in your system. If so no need of another swap space. The swap should be double the RAM size. If there is no swap then create a new swap space. The screen shots are as follows:

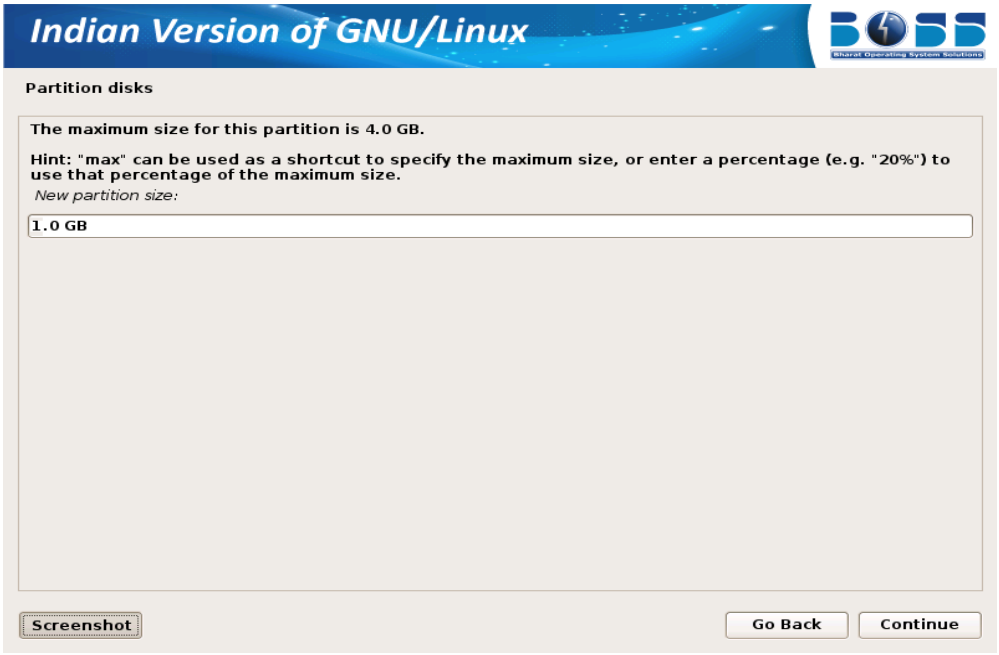
10. Create swap area of 1GB from free space



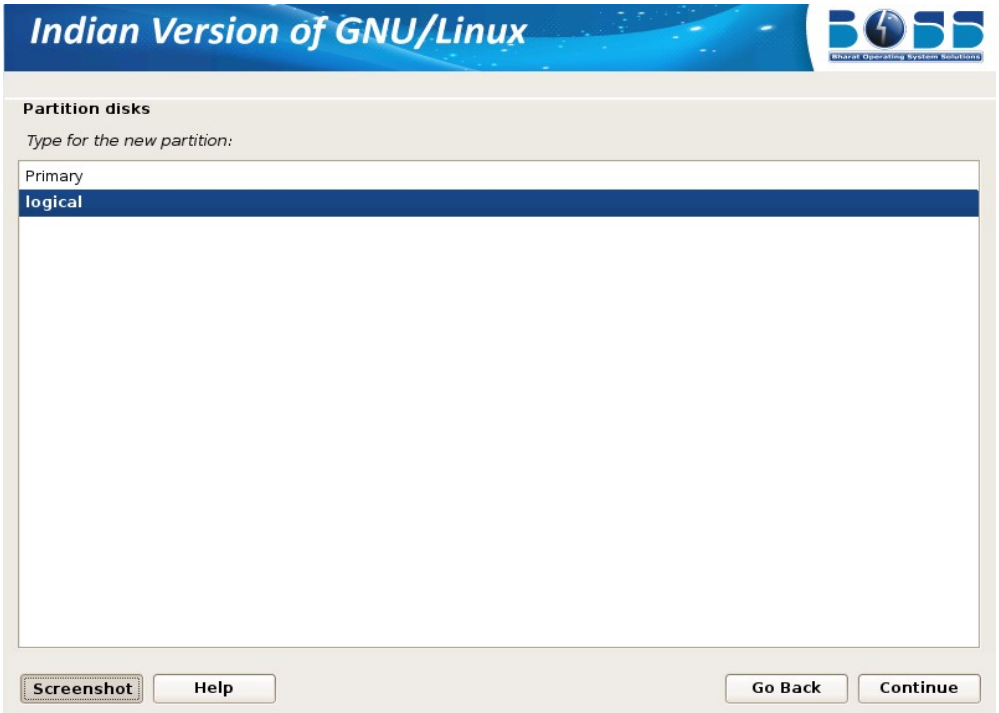
11. Create new swap area by double clicking “Create a new partition”.



12. Specify the partition size for swap area as 1.0 GB.

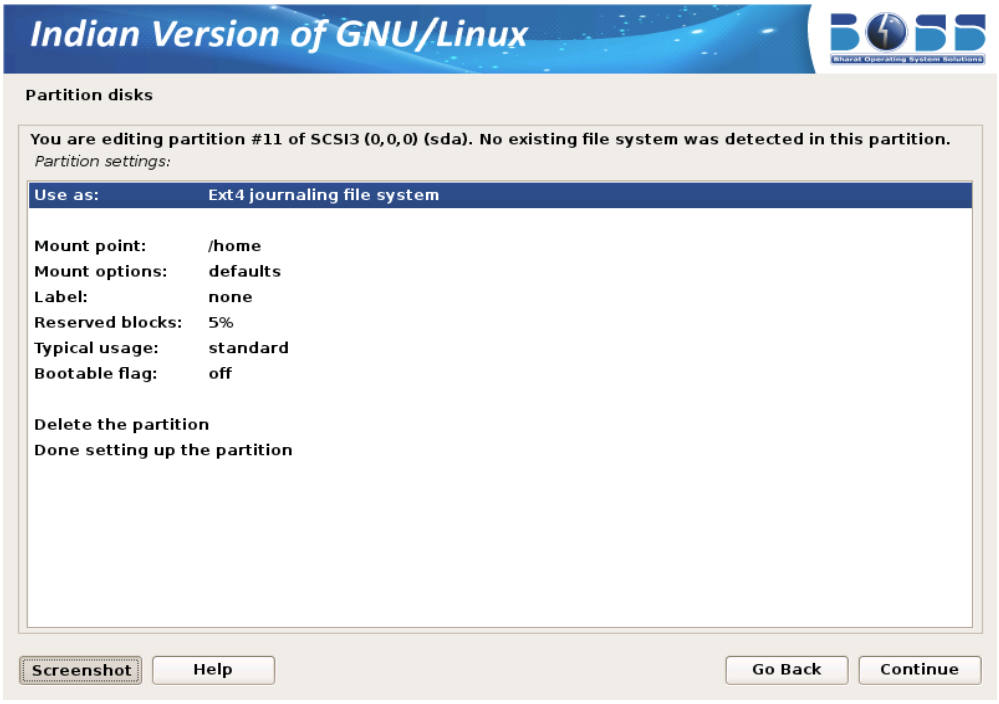


13. Select the type for the new partition.

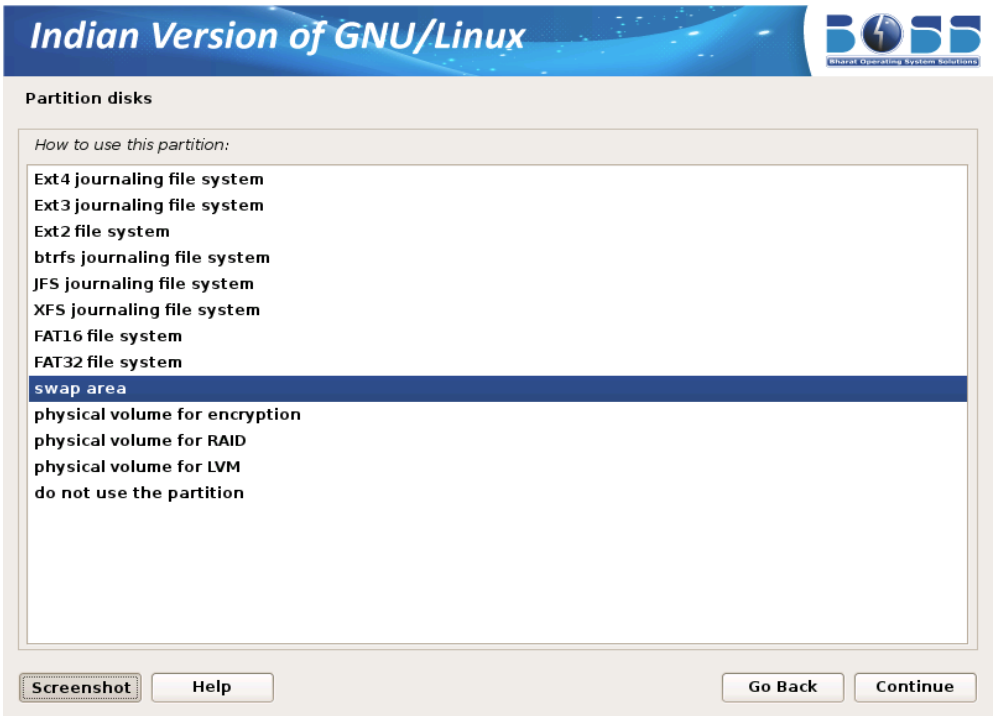


14. Specify whether the partition should be at the beginning or at the End.

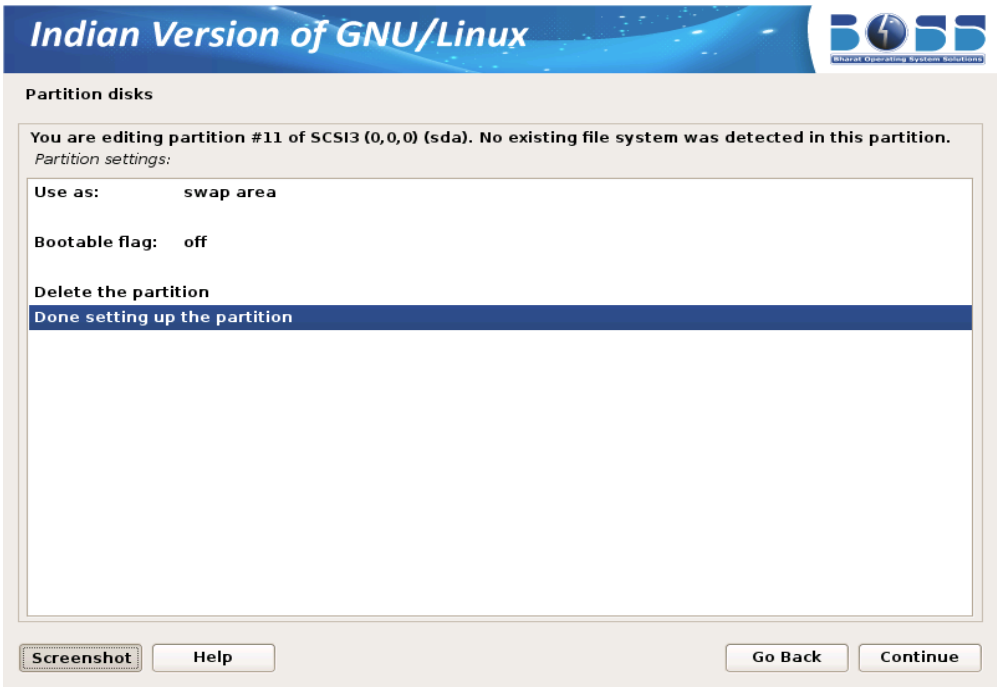
15. Change default file system ext3 to swap by double clicking “Ext3 journaling file system” in the screen shown below.



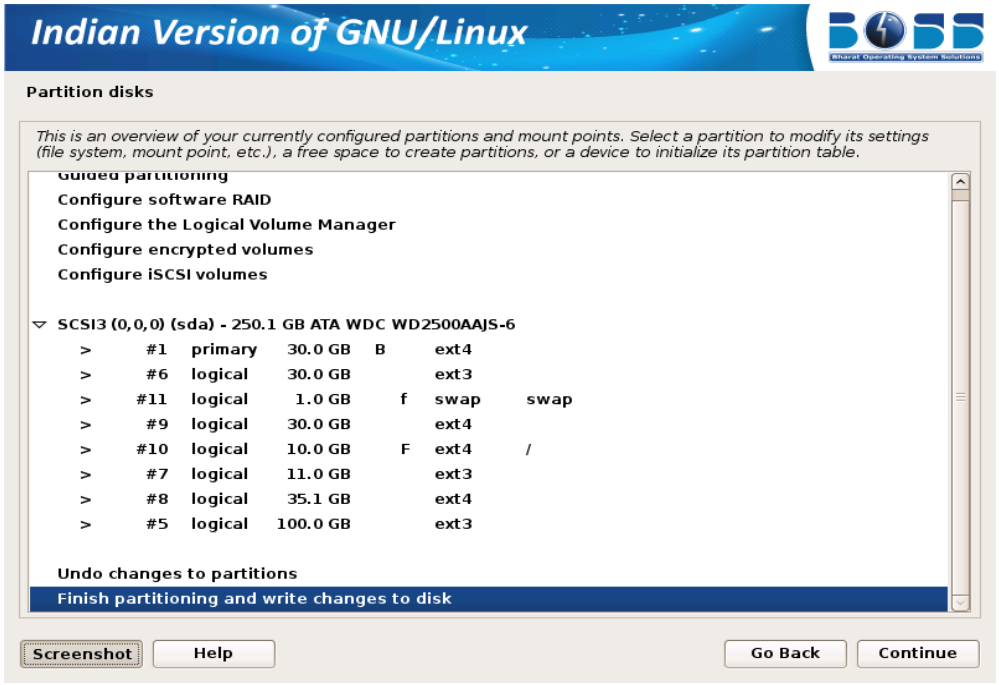
16. Double click on “swap area”.



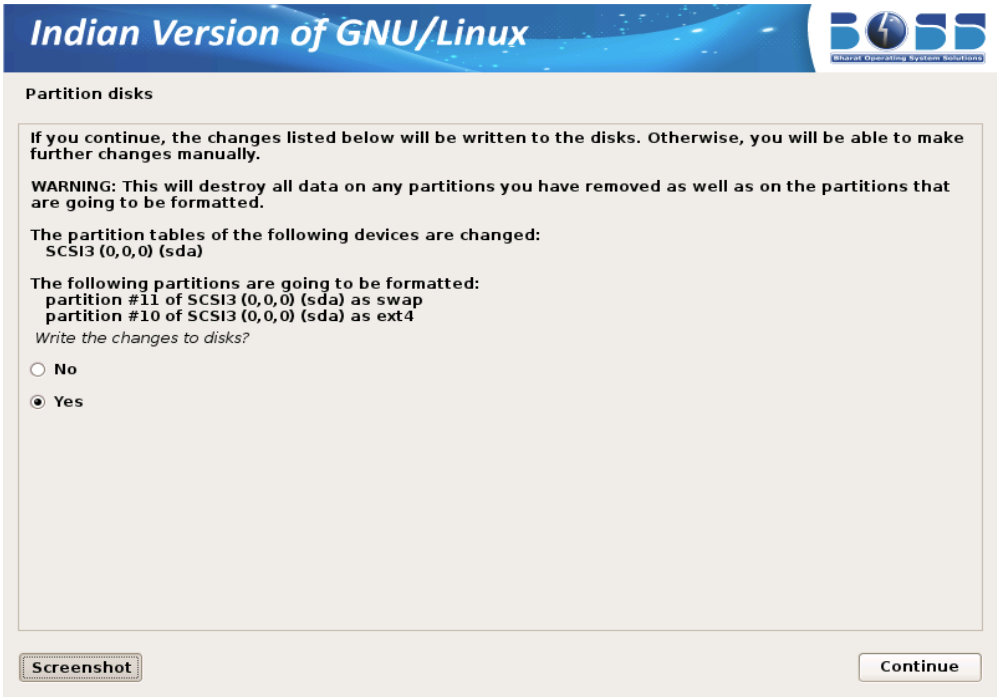
17. Creation of swap area is completed. Click on “Done setting up the partition” and then click “Continue”



18. Finish the partitioning process.



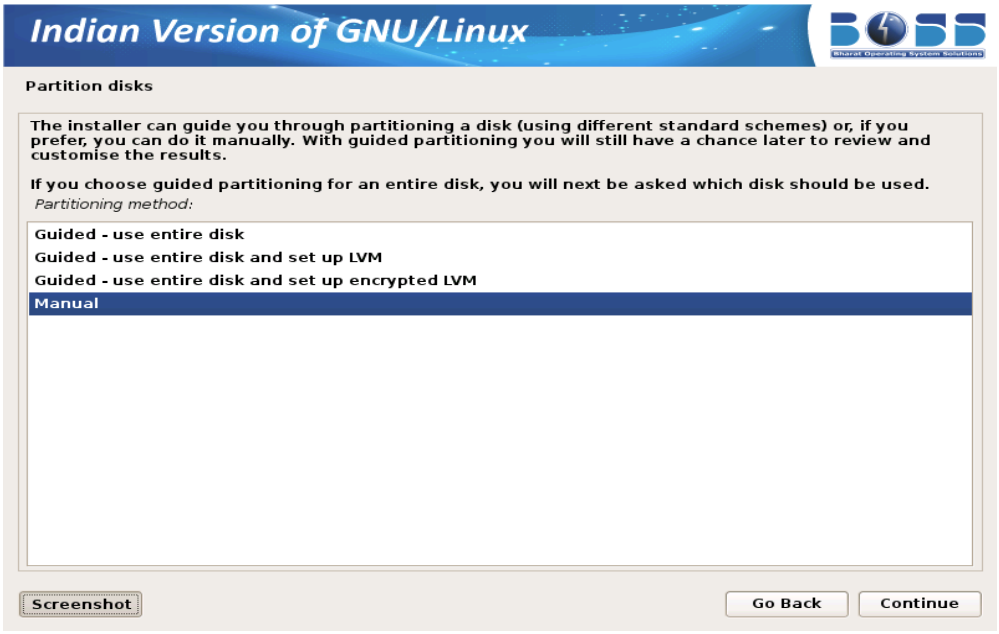
19. After all the partitions are allocated, you need to write the changes to disk. For this select “Yes” in in the following screen and then click “Continue”.



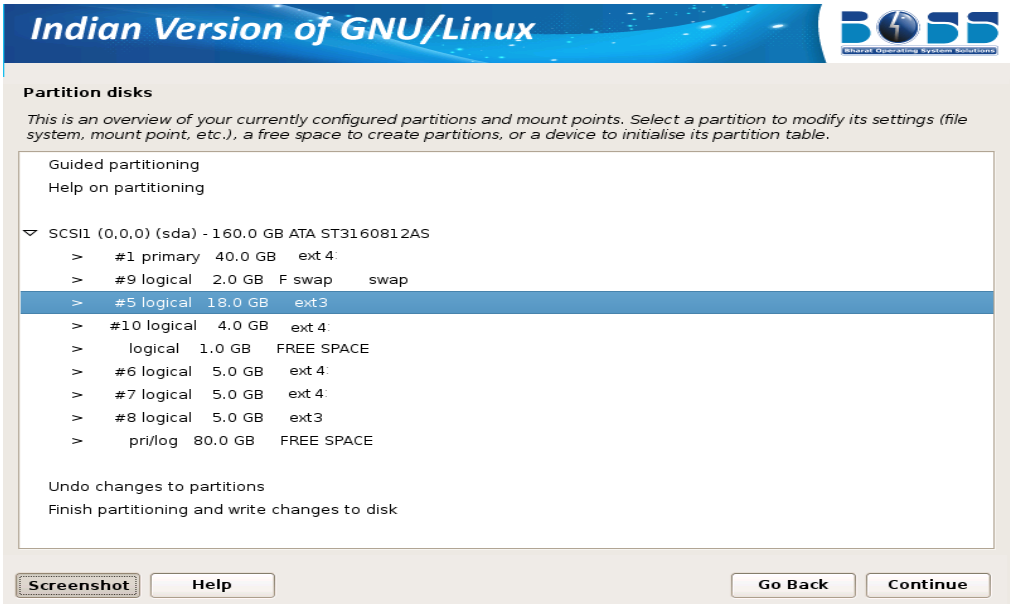
Resizing the Hard disk Partition

To resize hard disk partition at the time of installing BOSS GNU/Linux, follow these steps:

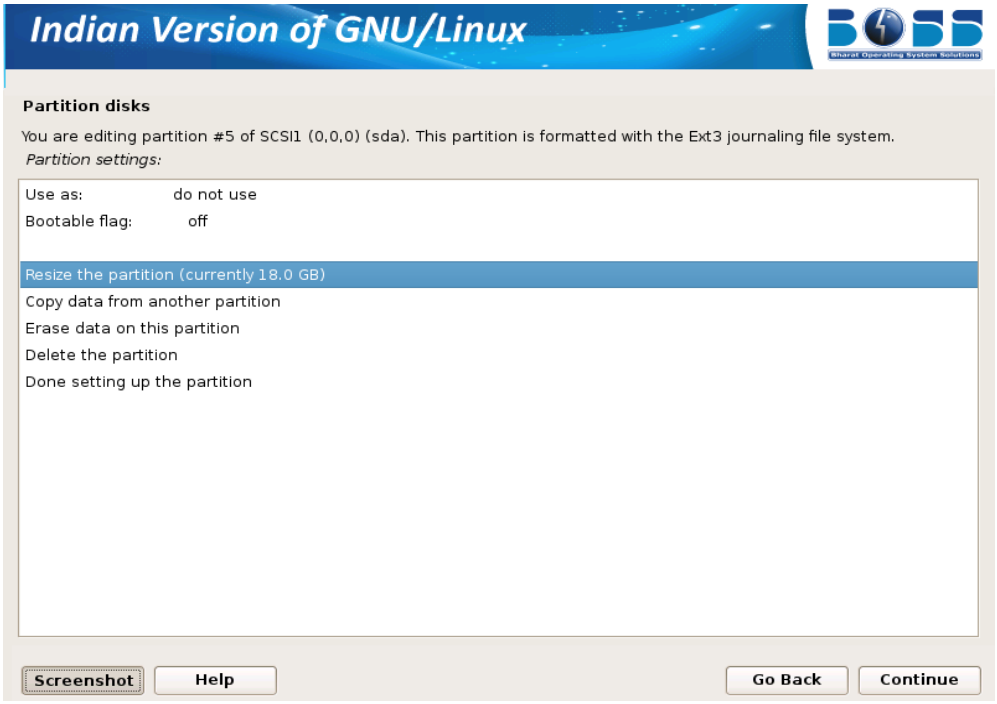
1. A screen with name “Partition disks” will be displayed. In that click “Manual” and then click “Continue.”



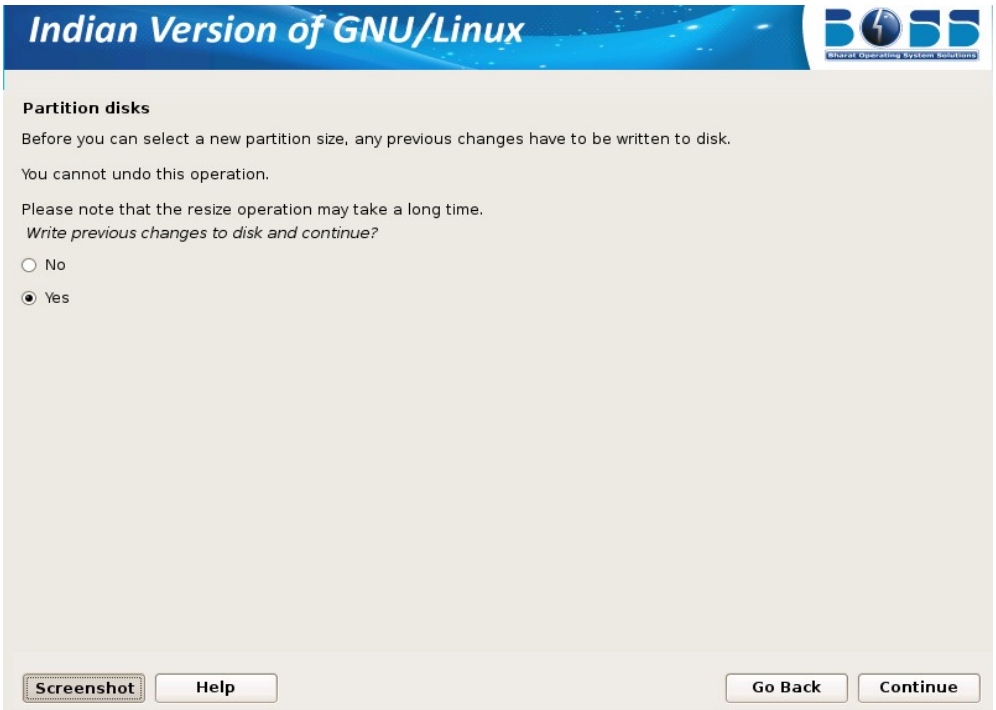
2. After clicking “Manual” a screen will be displayed which contains overview of your currently configured partitions and mount points. Then click on the partition which you want to resize and then click “Continue”.



3. Double click on “Resize the partition”.

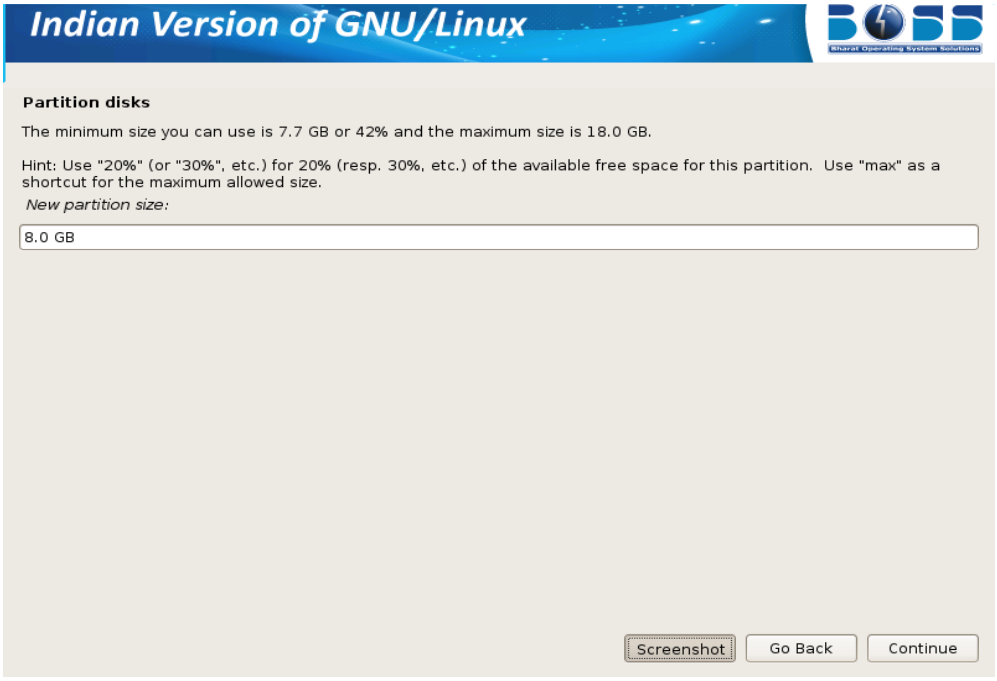


4. It will ask the confirmation before writing the changes to disk. Click “Yes” and then click “Continue”.

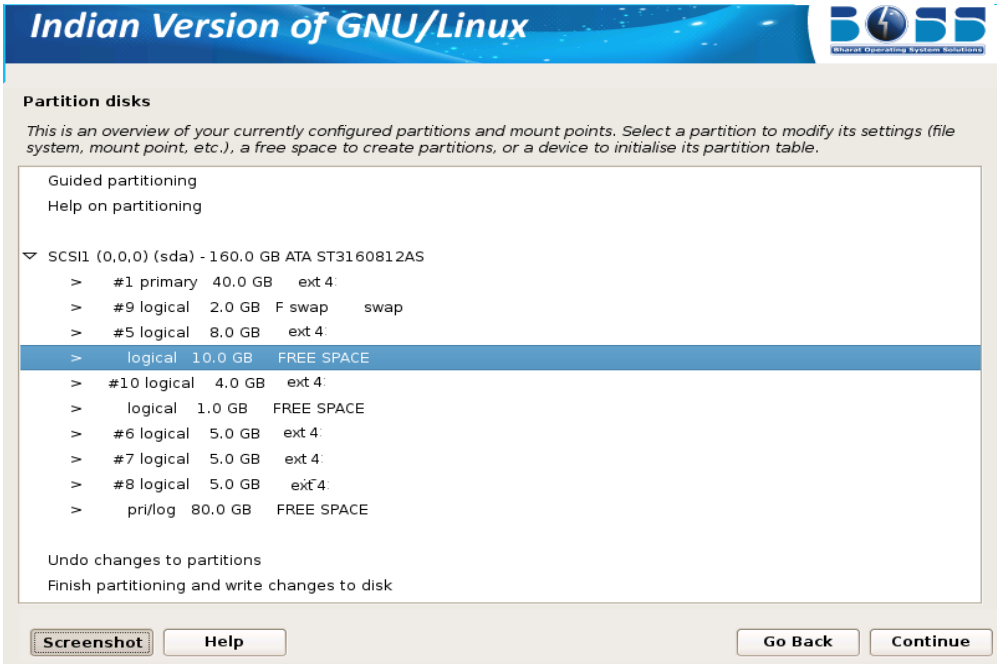


5. This screen will show by default maximum size as a new partition size which you can

change as per requirement. You can give new partition size more than whatever required to that particular file system then click “Continue”.

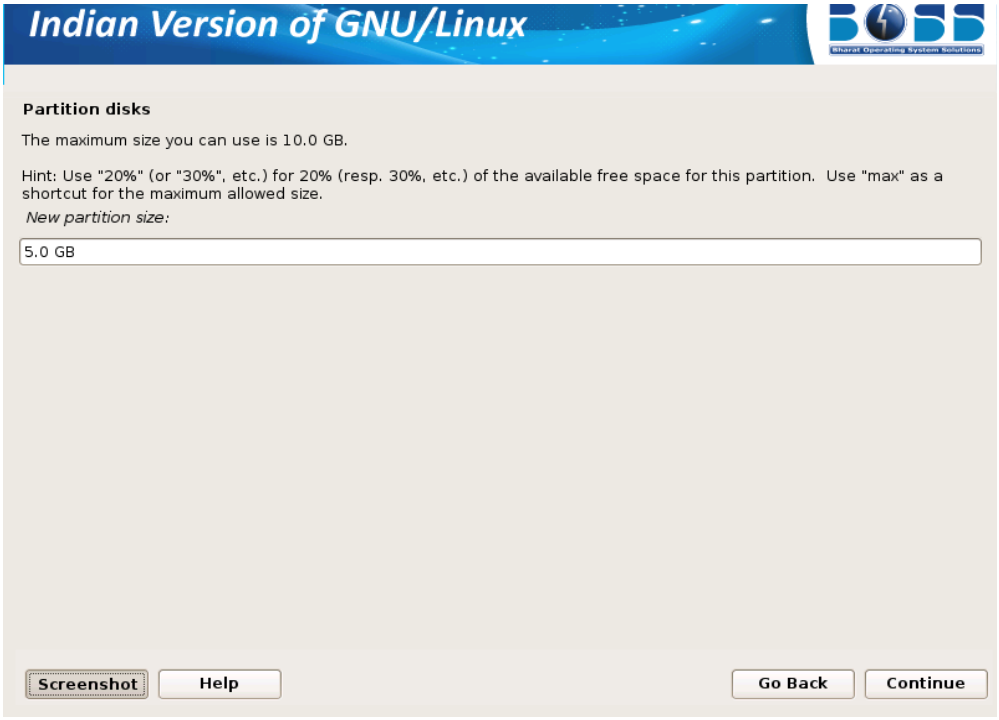


6. Now you have done resizing. You will get some free space to install BOSS GNU/Linux. Click on free space.

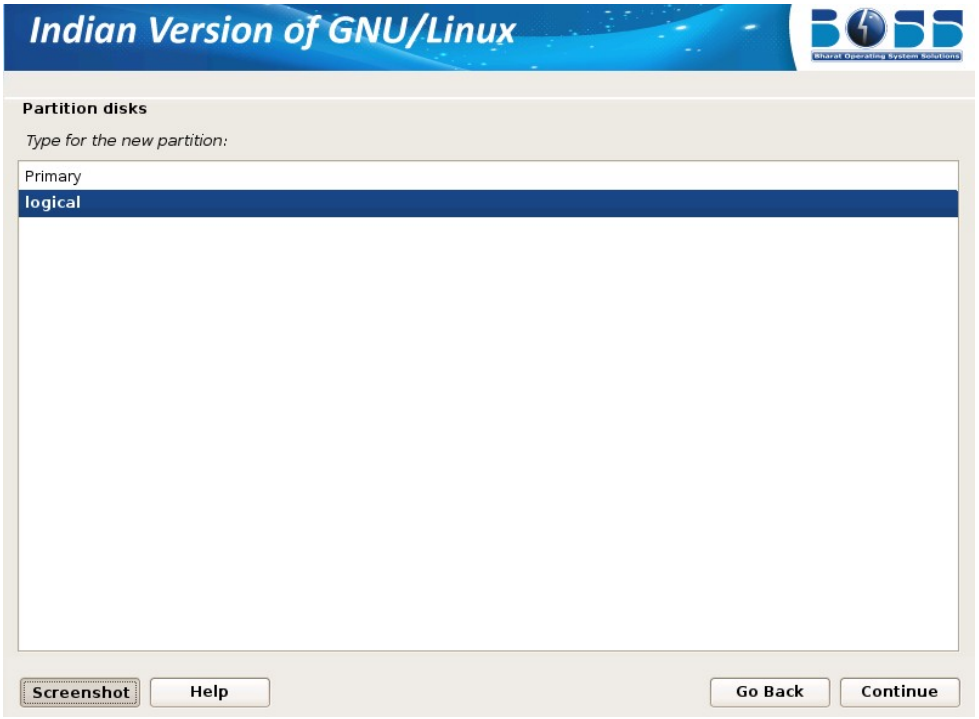


7. Create new partition for BOSS GNU/Linux by clicking “Create a new partition”.

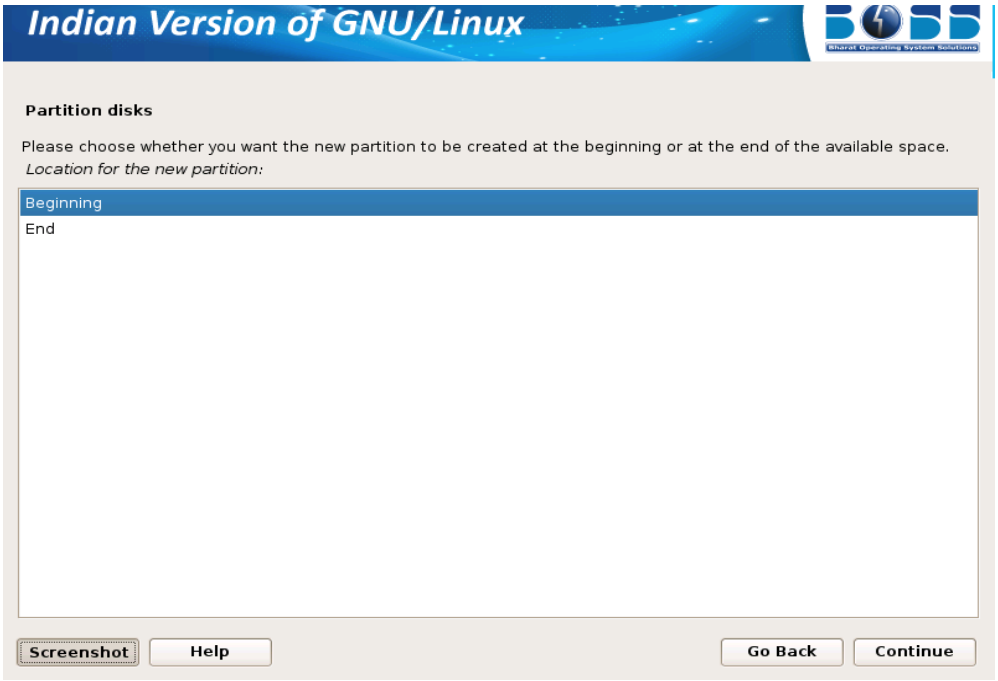
8. Give partition size for installing BOSS GNU/Linux. It should be minimum 5.0 GB.



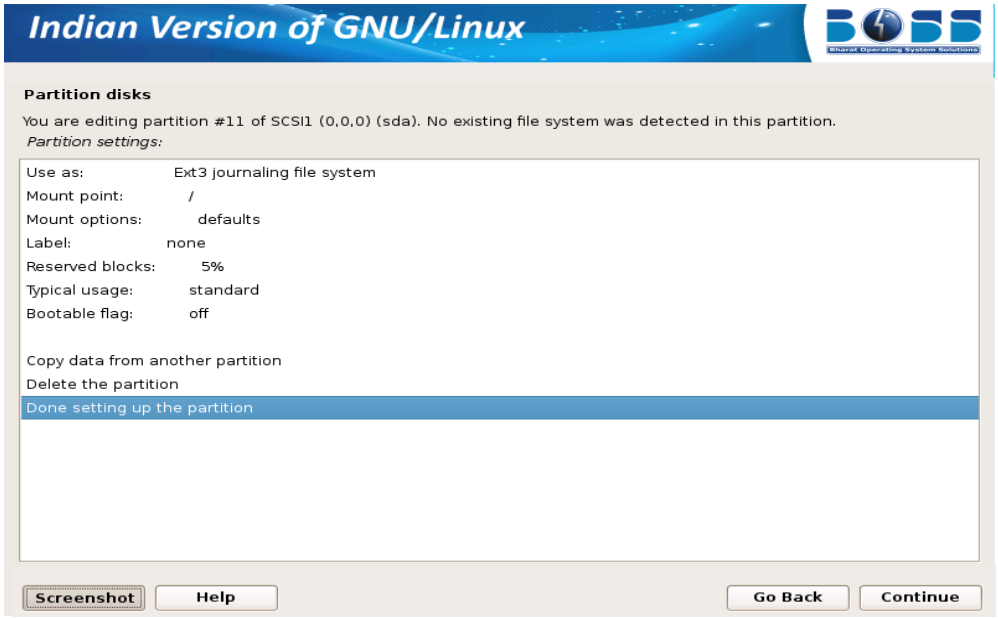
9. Select the type of partition.



10. Specify whether the partition should be at the beginning or end.

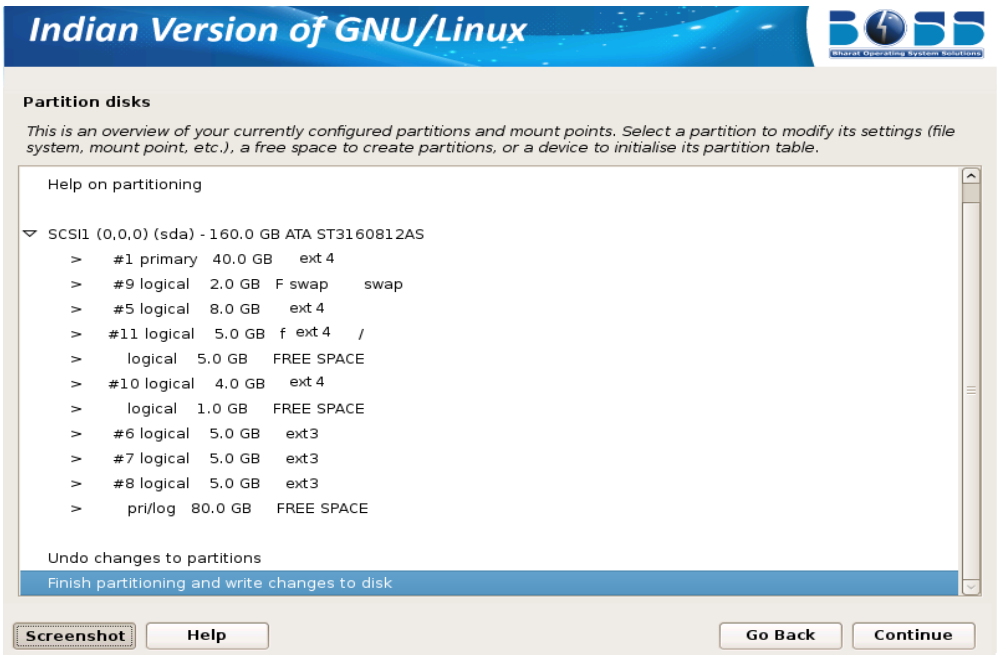


11. Partition setting is covered. Click “Done setting up the partition” and click “Continue”.

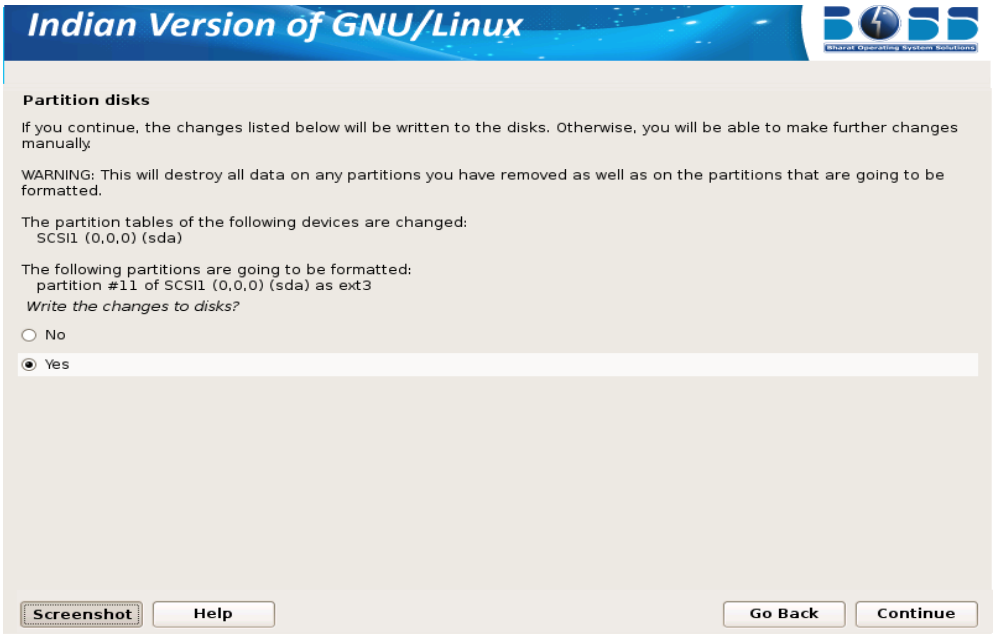


After selecting the partition for the "/", you need to select a partition for the "swap" space. If you are already having Linux installed on your system then you will be having a swap space in your system. If so no need of another swap space. The swap should be double the RAM size. If there is no swap then create a new swap space by following the steps 8 to 15 in "Creating a new partition" section.

12. Finish the partitioning process.



13. After all the partitions are allocated, you need to write the changes to disk. For this select “Yes” in in the following screen and then click “Continue”.



2.8 Installing the Base System

BOSS GNU/Linux is ready to install the packages into your system now.

2.9 Create User Account

Next step is to create a user account and setting password for the user. You can use this user account for logging into BOSS GNU/Linux. And this user will be used for auto login to BOSS GNU/Linux after certain time period.

The screen shots are as follows:

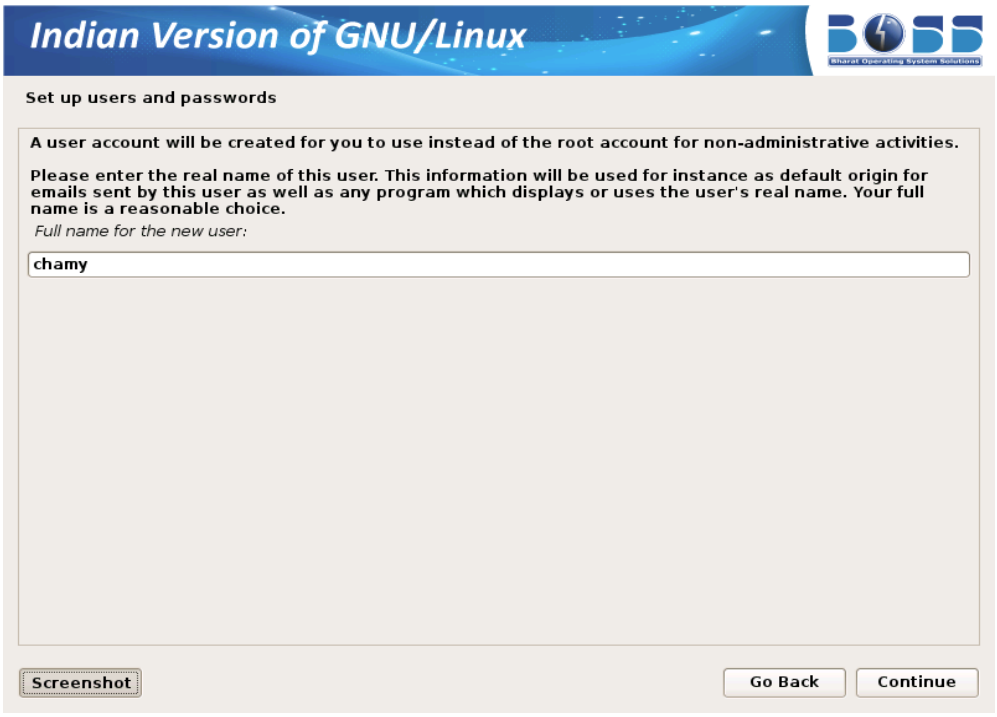


Figure 8. Set up user account

Figure 8.1 Set up user account's username

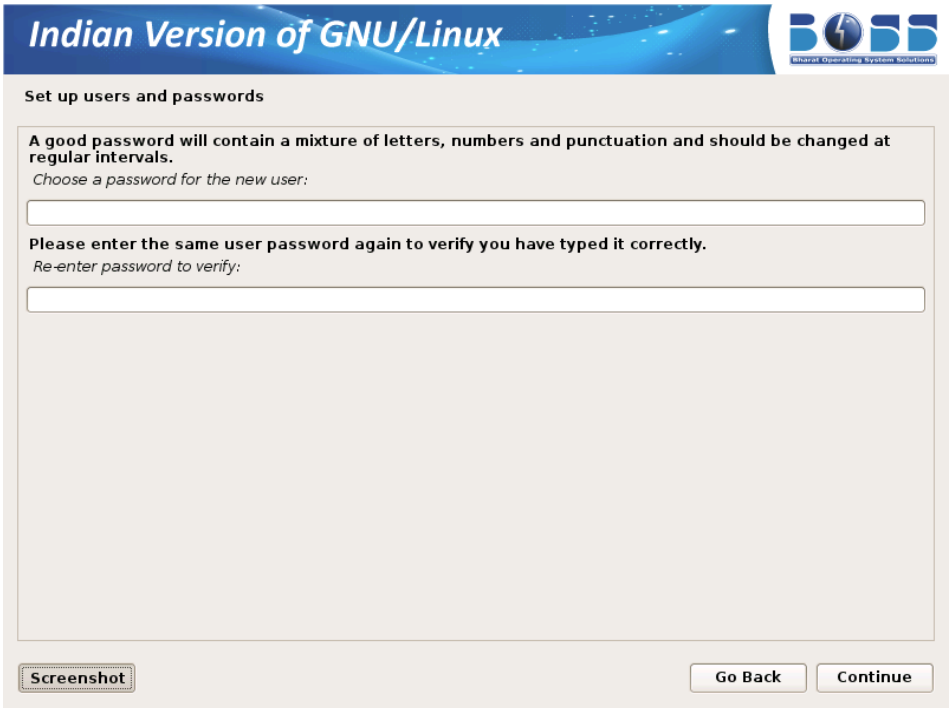
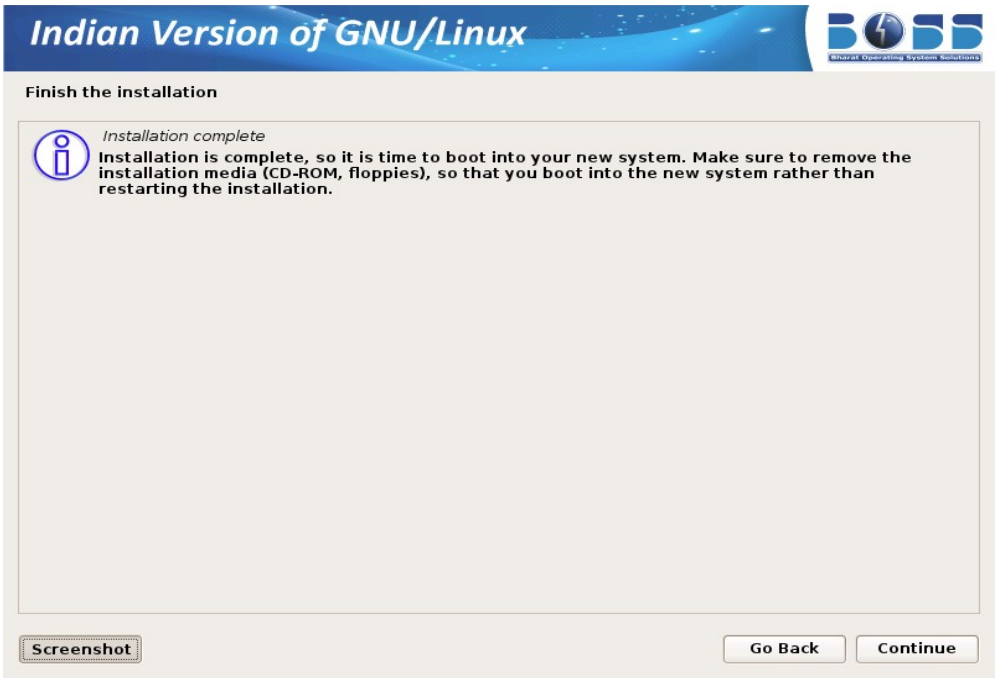


Figure 8.2 Set up user account's password

2.10 GRUB Installation



Once the installation process gets completed, the system restarts automatically.

2.11 Contact Us

To know more about us, you can visit the NRCFOSS portal at http://nrcfoss.org.in/ and further information about BOSS GNU/Linux and recent updates can be found at http://www.bosslinux.in. Also you can talk to the BOSS Team Members online through the irc channel *#BOSS-nrcfoss at Freenode.*

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No.4, Rajiv Gandhi Salai,

Taramani,

Chennai-600113

Ph: 91-44 - 2254 2226/27

Website: http://www.bosslinux.in

Email : bosslinux@cdac.in

2.12 BOSS Support Centres

Addresses of BOSS Support Centres in India

BOSS Support Centre

Centre for Development of Advanced Computing ,

Plot E-2/1, Block GP, Sector V,

Bindhanagar, Salt Lake,

Kolkata 700 091

Ph: 033 23573950

BOSS Support Centre

Centre for Development of Advanced Computing,

68,Electronics City,

Bangalore 560100

PH: 080 28523300

Email : bosslinux@ncb.ernet.in, bosslinux@cdacbangalore.in

BOSS Support Centre

Centre for Development of Advanced Computing ,

A-34, Phase 8, Industrial Area,

Mohali, Chandigarh 160 071

Punjab

Ph: 0172 2237054

BOSS Lab,C-DAC

6 CGO Complex

Electronics Niketan

Lodhi Road

New Delhi -110003

Ph: 011 - 24301313

Email: bosshelp@mit.gov.in

BOSS Support Centre

Centre for Development of Advanced Computing,

Anusandhan Bhawan, C-56/1,

Sector 62,

Noida 201 307

Uttar Pradesh

PH: 0120 – 3063344

BOSS Support Centre

Centre for Development of Advanced Computing ,

Vellayambalam,

Thirunananthapuram 695033

Ph: 0471 – 2314412

BOSS Support Centre

Centre for Development of Advanced Computing ,

Campus of Pune University

Pune 411 007

Ph: 020 - 2564093

BOSS Support Centre

Centre for Development of Advanced Computing ,

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Ameerpeth, Hyderabad 500 016

Ph: 040 - 231050115

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Juhu, Mumbai 400 049

Ph: 022 - 26201488

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Chennai-600113

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