# ELASTIX 2.0

# Installation Guide

| | |
|---|---|
| Author | Bob Fryer |
| Date | 31/10/2010 |
| Revision | 1.0 |
| Due for Review | Each Elastix release |
| Licence | GNU/FDL |

## Introduction

This guide provides step by step instructions for the installation of Elastix 2.0. It was prepared using the Elastix ISO version **Elastix-2.0.2-i386-bin-23Aug2010 .** The exact ISO version should not matter and has been provided here for reference only.

At the end of this guide is a table that you should print off for your own reference before you commence the Elastix installation. No matter how many times you have installed Elastix, how proficient you are, you can make mistakes, and you can forget things. Fill it in as you go, and file it away or give it to the person that you might be building the system for. It will probably save you hours in the long run.

If you have problems with the installation it is recommended you look at the troubleshooting guide at the end of this document. It is not a definitive guide to resolving your issues, just a collection of regular issues that may arise. These issues are not necessarily an issue with Elastix per se, but with the Linux distribution (Centos 5) that they have selected and how it handles your particular hardware. This will occur with any distribution.

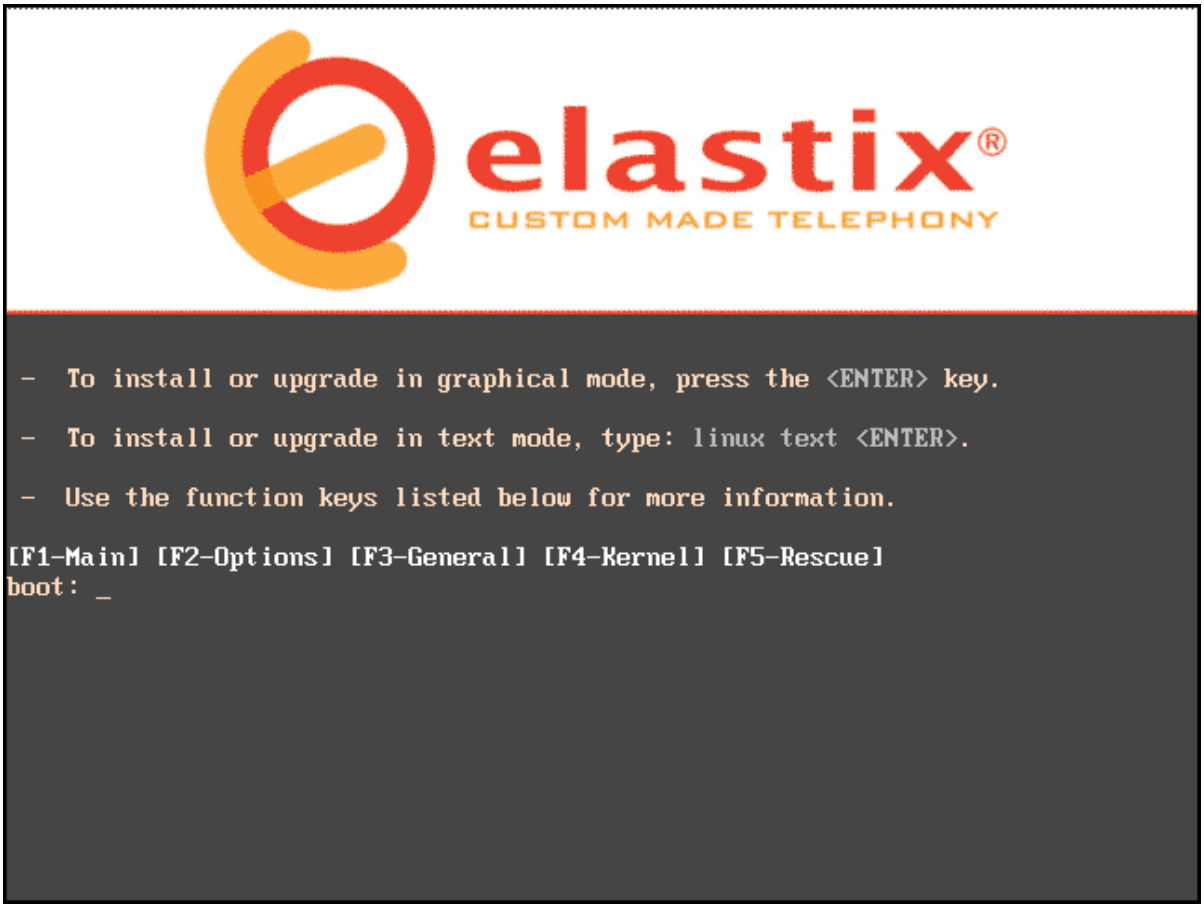
If you have a problem with the installation, use the forums and mailing lists. Most can tell you what your issue may be and possibly give you an answer.

## Preparation

Download the latest 32bit Elastix ISO Image from www.elastix.org and burn this image to a CD. Note, this is not like normal burning data to a CD. You need to find an option in your CD Burning Software called BURN IMAGE or BURN ISO IMAGE. If you don't have this in your Burner Software (e.g. some of the bundled CD burning software that comes with computers does not have this option), then download the free CDBurnerXP from this link http://cdburnerxp.se/en/home , which does burn ISO images. I recommend this with no commercial interest in the software, just that it does its job and does it well.

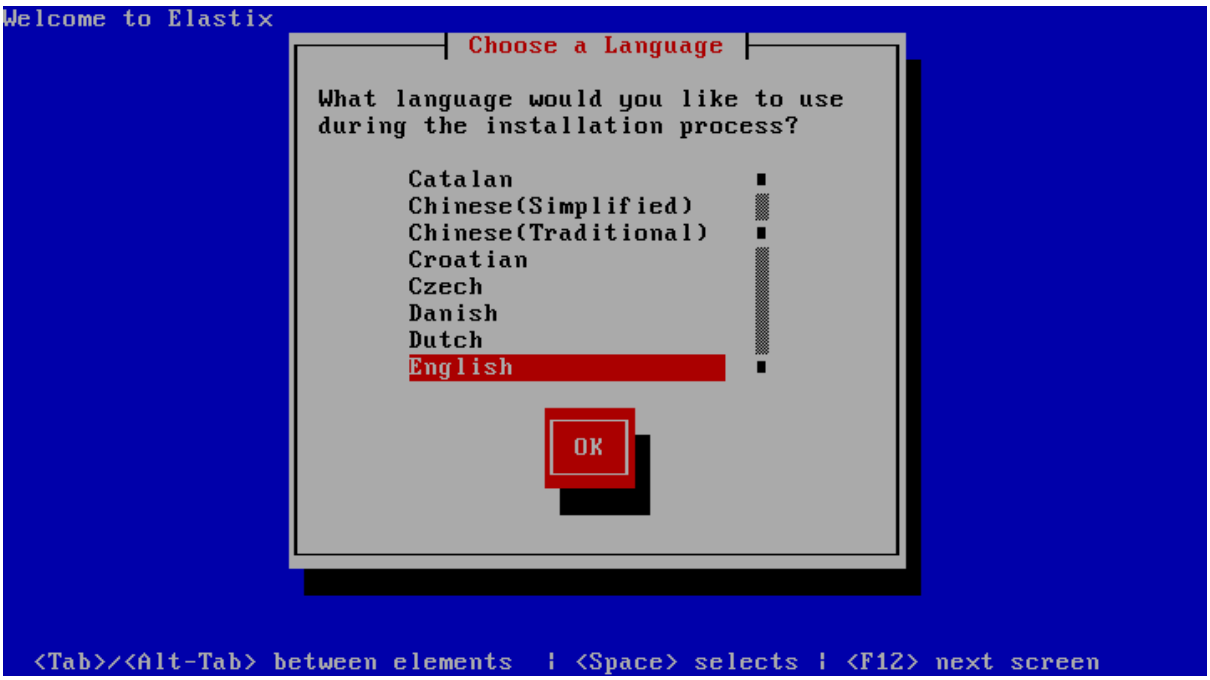
Once the CD burn is complete, place the CD in your machine that you have dedicated for your Elastix Server. A clear warning, this CD will wipe any data that may be on your machine and will use the hard disk for the Elastix system, so if you have any data, back it up now, it won't be there when you finish with your Elastix setup. Reboot your machine and make sure you have the machine set to boot off CD. This might be automatic, or you may have to watch your start up screens and press a function key to select a boot device, or you may have to change it in the BIOS, and also there are some that automatically boot off the CD, but ask you on the screen to press any key to boot from the CD, otherwise it boots off the Hard disk as normal. Either way this is something you need to work out yourself, it is a function that varies from machine to machine.

If you successfully boot off the disk you will see the following screen on the next page.




At this point you machine has correctly booted off the CD, and you can either wait and it will start the installation by itself, or you can press enter and it will commence immediately.

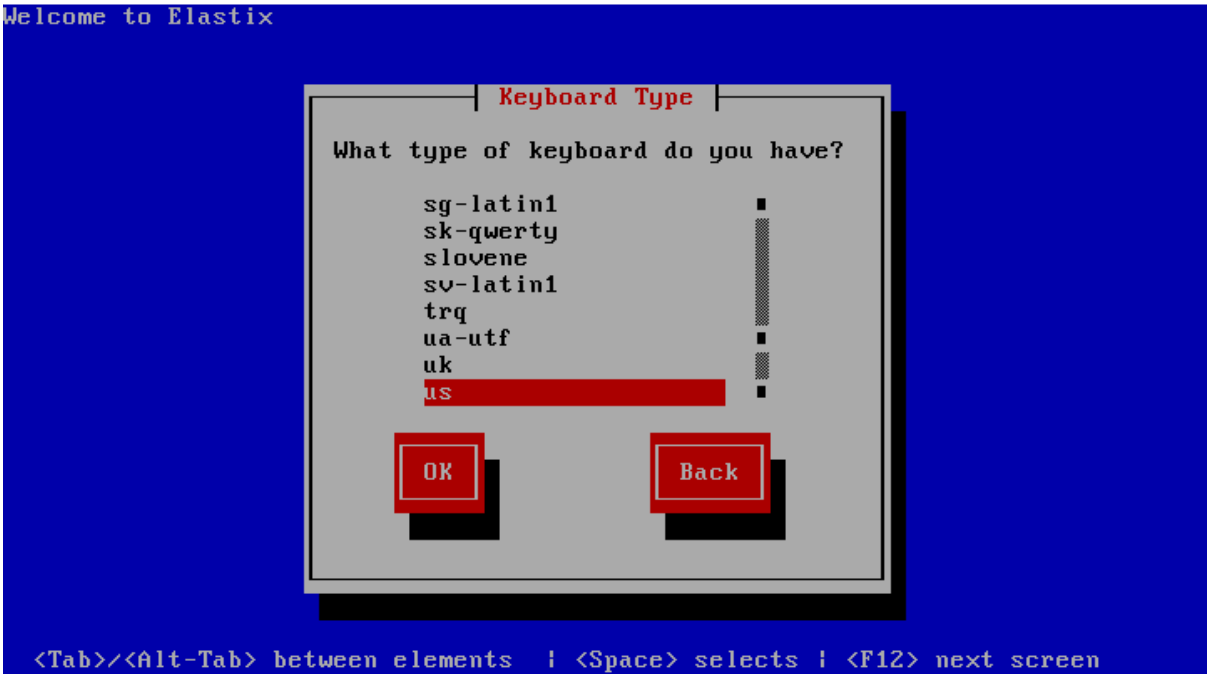
You will see it commence a basic start up, load a few drivers and will next stop at the screen below



For these and all following screens, you use a combination of the up and down arrows, the <TAB> button and the <SPACE> bar. The space bar acts as the <ENTER> button, <TAB> moves between the sections (e.g. between selection of the language and the OK button in the above screen). The <SPACE> bar is also used to toggle the * in multiple selections.

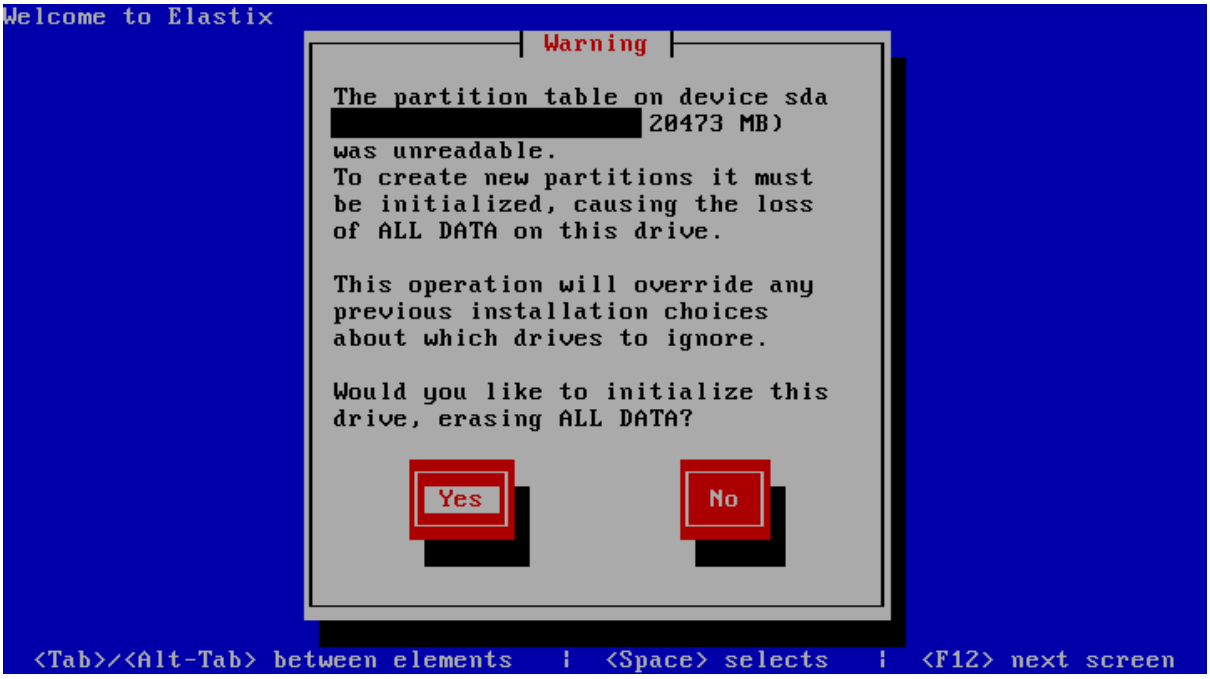
Select your language using the arrow keys and then press <TAB> to move to the OK button. Once the OK is highlighted you can then press <SPACE>.

The following screen will appear



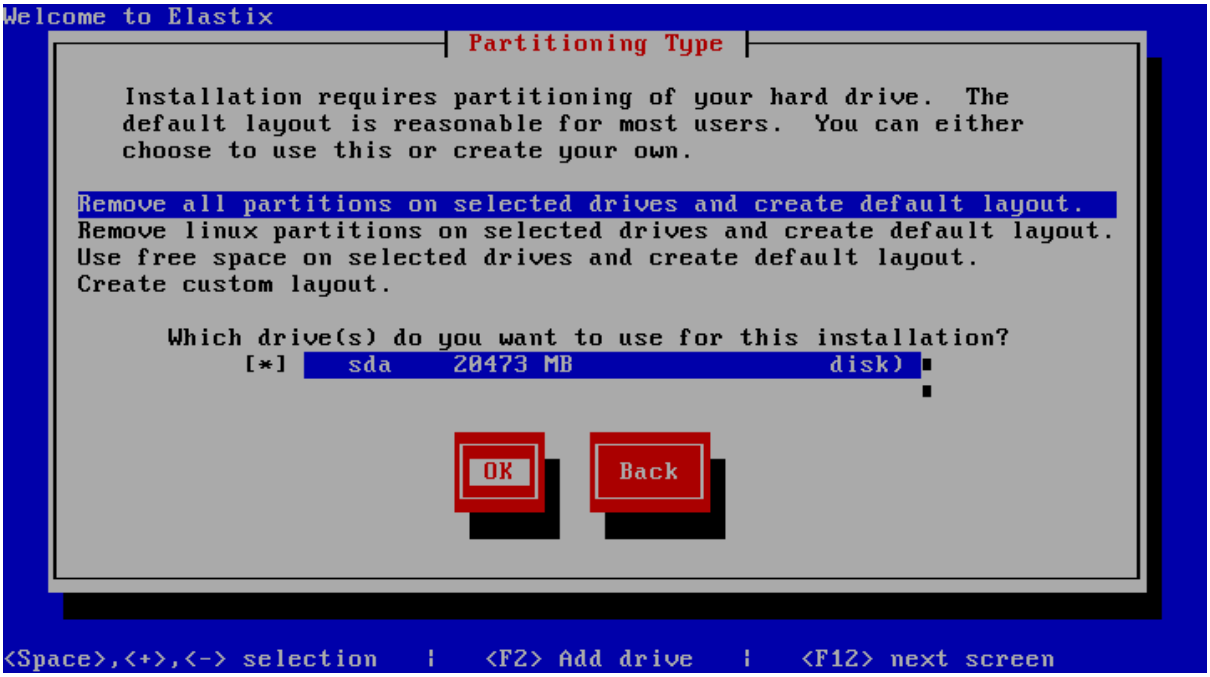

For most users, the US keyboard will suit, so press <TAB> to move the highlight to the OK button and press the <SPACE> bar.

The next screen may or may not come up on your installation, depending on whether you have a clean Hard Drive with no data or you have a Hard Drive with a partition already on it. In this case we are working with a new hard drive. The black mark out in the diagram below may vary from system to system, so I have blanked it out to avoid confusion.




In this screen it is telling us that it wants to initialise the drive and erase all data. The YES button is already highlighted, so we proceed by pressing <SPACE>.

Now the next screen needs a little bit of tender care.

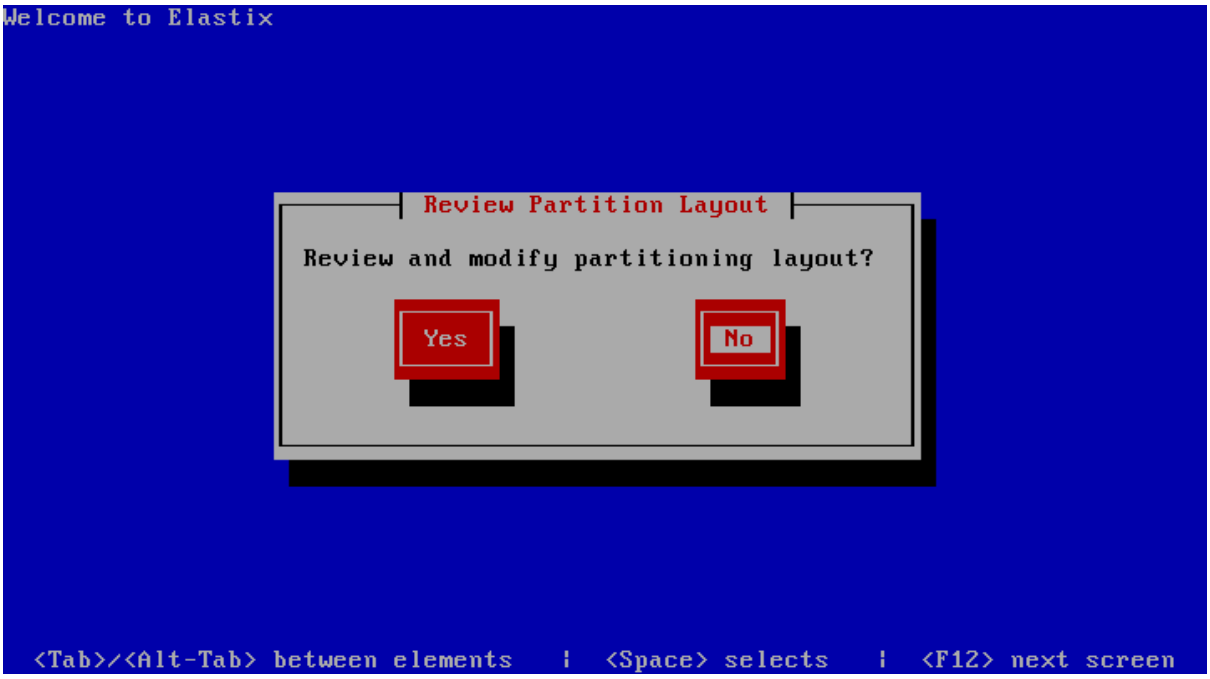



The reason for this is that the default selections need to be changed, as the defaults have been set to avoid you accidentally erasing the data on your hard drive

You need to use the arrow keys to move the selection up to REMOVE ALL PARTITIONS as shown in the previous screen. If you have multiple drives in your system, you need to make sure that it has chosen the correct drive. Now use TAB to move to the OK button and press the <SPACE> bar.

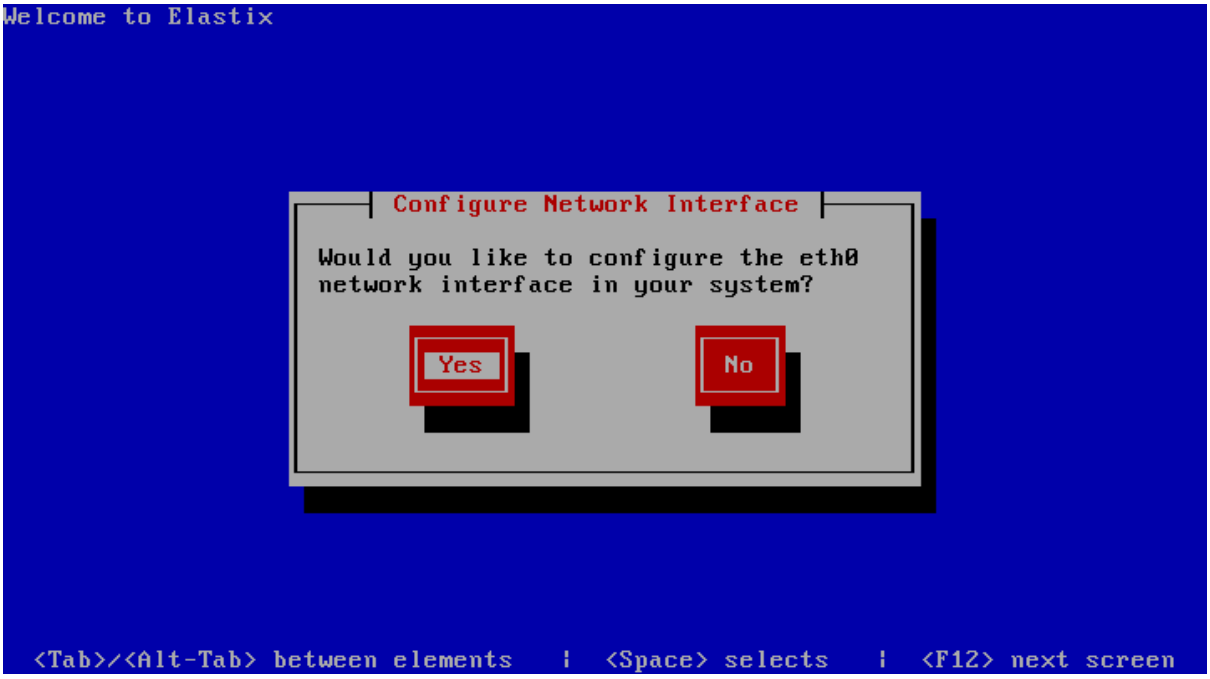



You need to use the <TAB> key to select the YES button and press SPACE if you are sure that there is no useable data on this drive.

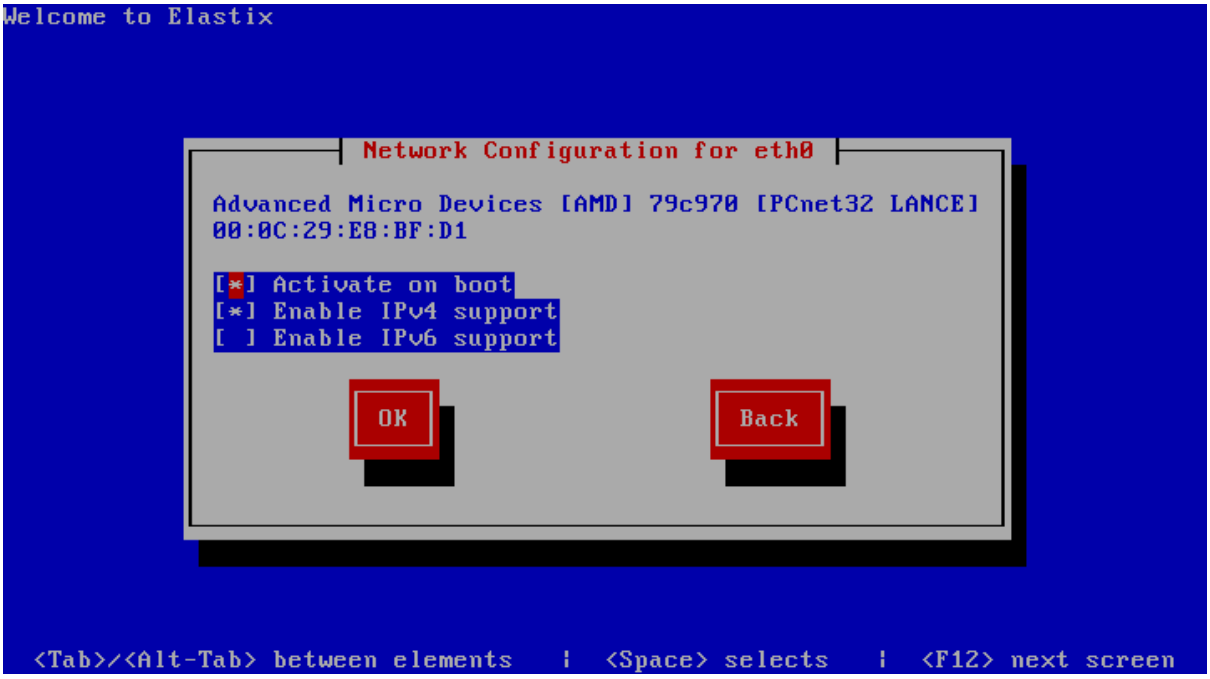



Again use the <TAB> key to move the highlight, this time to the NO button. Unless you are very familiar with Linux Partitioning, then you don't want to review and possibly change the partitioning, so just take the easy option and select NO.

The next screen allows us to configure the network card on your machine.

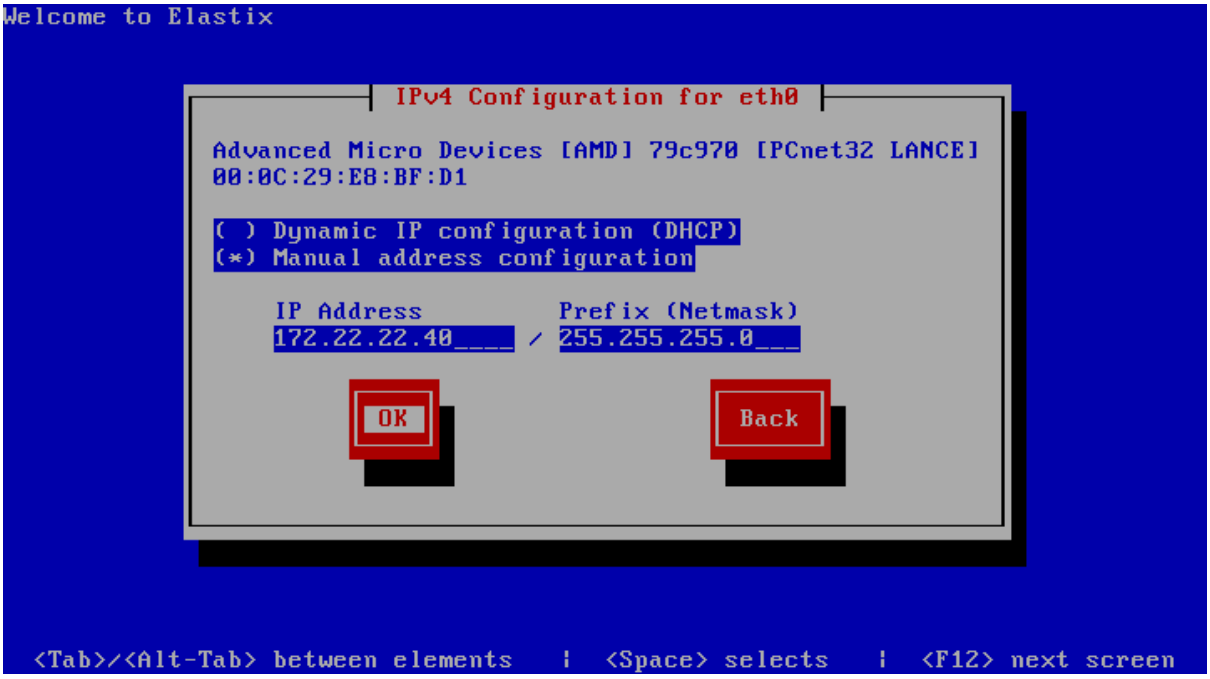



So just press the <SPACE> bar and the next screen will appear




This is one of the screens where you need to use the space bar to select your options. You definitely need to ACTIVATE ON BOOT (otherwise it will not start the Network Card), and as a minimum select ENABLE IPv4 support. Unless you 100% know what you are doing, I would leave IPv6 support not enabled.

Press the <TAB> key to move to highlight the OK button and proceed to the next screen

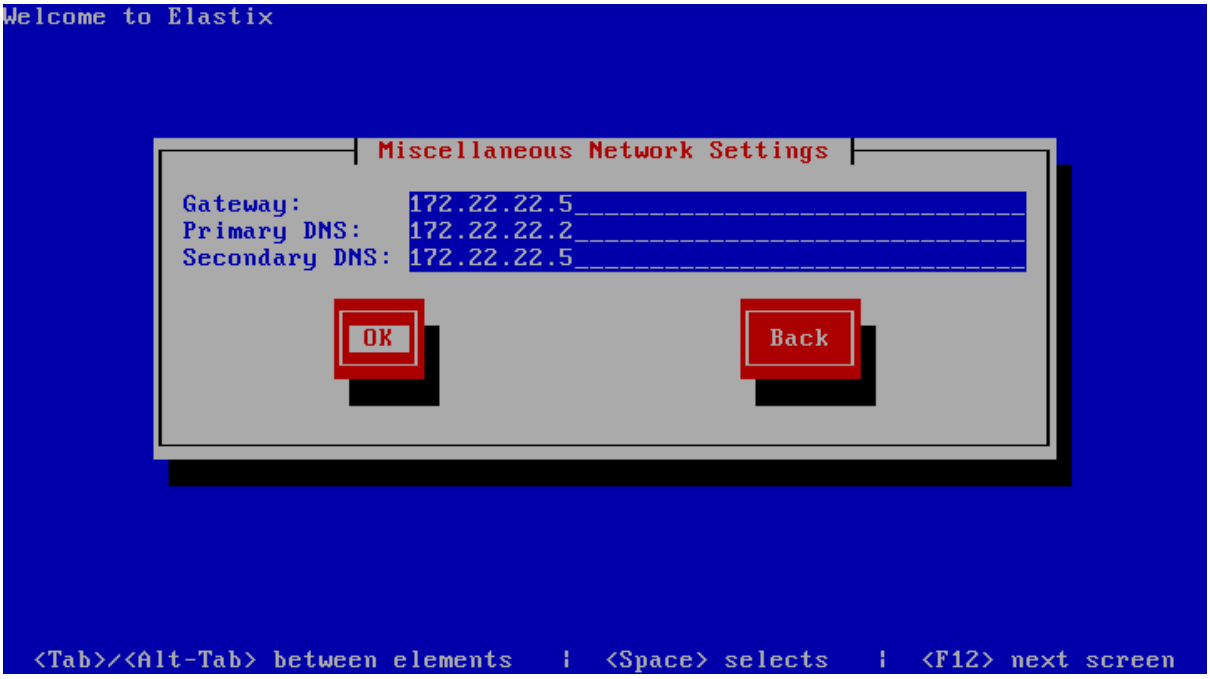



This is where you set your Network card settings. If you want to use DHCP, then select DHCP, and the Network card will pick up the settings from your DHCP server on your network (if you have one). For 99% of systems however, most will be setup with a STATIC IP (manual) address).

Now this guide is not a tutorial on IP address ranges and subnets, so if you don't understand what IP address you should be using or what subnet type to use, then my serious recommendation is to learn it before proceeding any further, unless someone is available to help you with this aspect. If you know what you are doing then go ahead and enter your IP address and subnet for the Elastix system primary network card.

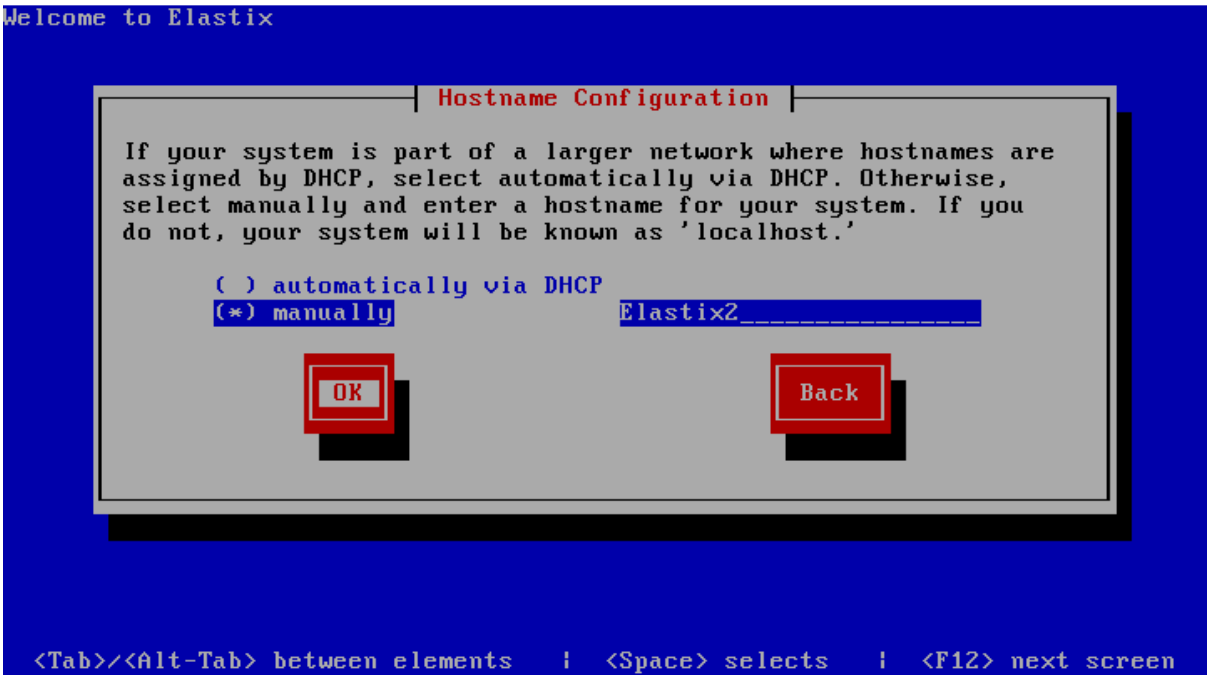
Now <TAB> to the ok button and press <SPACE>

The following screen will appear



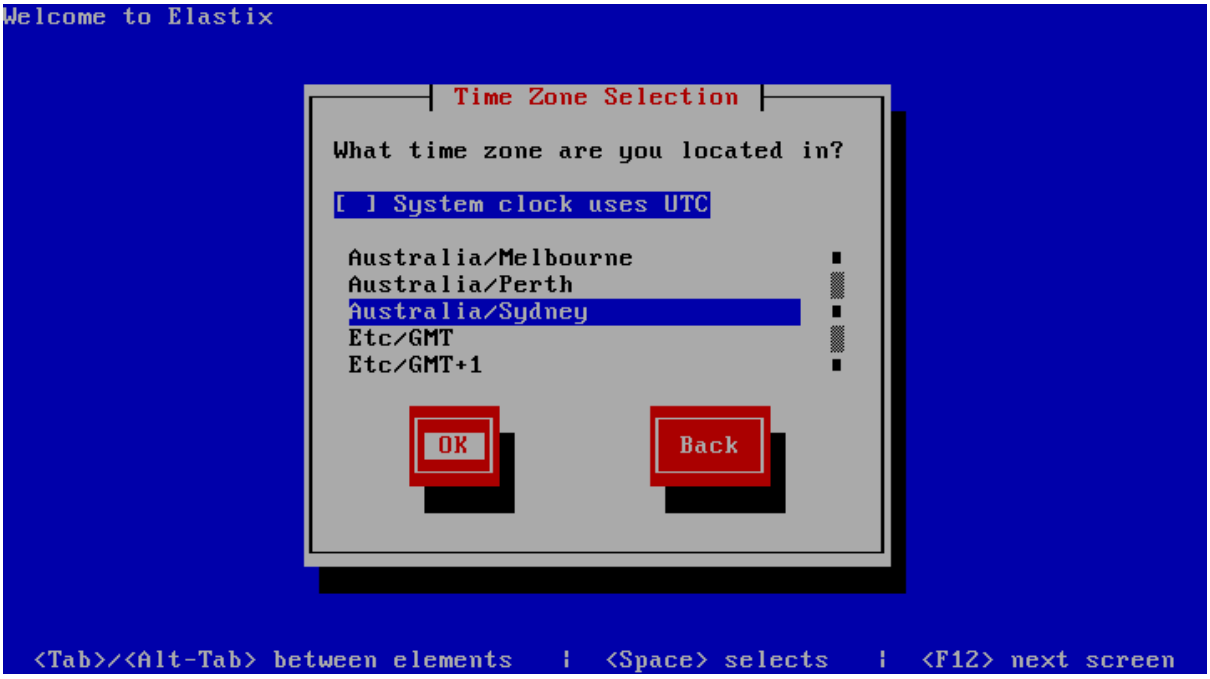

Here you set the Gateway, Primary DNS and Secondary DNS IP addresses. Again you should know these. On many systems, the Gateway is your router, your primary DNS server would normally be a DNS Server on your Network (e.g. a Windows or Linux Server) and as a backup a good option if your router acts as a DNS proxy (most do), then select your router as the secondary DNS.

Press <TAB> to get to the OK button and press <SPACE> to move to the next screen.



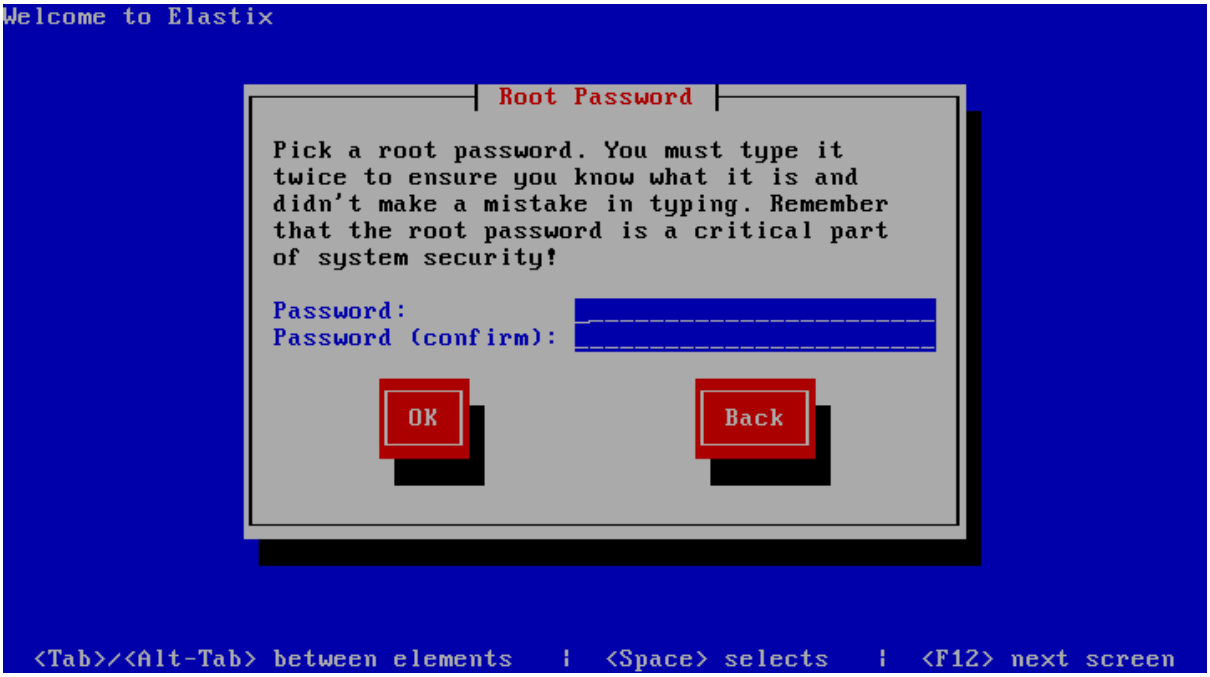

Here you just select Manually (which is the default) and type in a name for your server. It is not critical what the name is, just something unique to identify your server on the network.

Press <TAB> to highlight the OK button and press <SPACE> to move to the next screen.




In this screen we set the timezone. Select the timezone you are in and press <TAB> to move to the OK button and press <SPACE>.

The next screen and what you place in here is critical

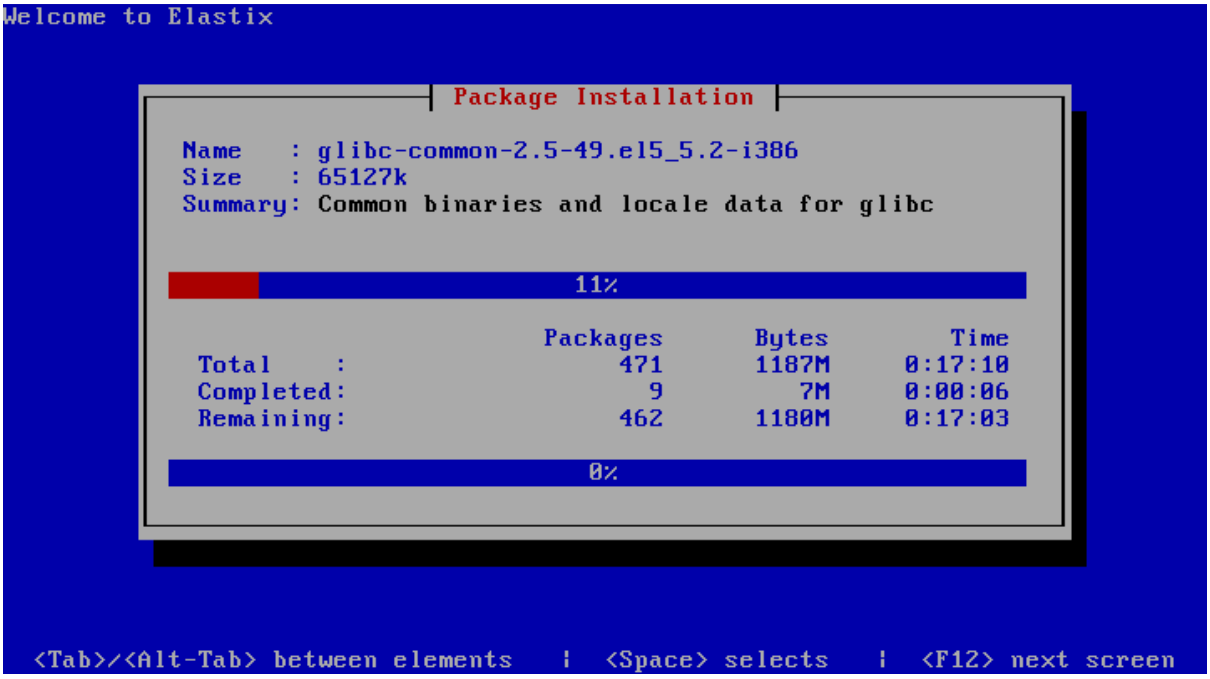



This is ROOT password screen and what you enter here needs to be written down. The number of people who don't write this down, or forget it is, or say that this screen did not come up is quite bad. The reason for this is that some more password screens come up as part of the install, and they forget which password is which. The result of losing this password results in a complete reinstall of the Elastix product, or a lot of technical reading and understanding of Linux to understand how to reset this password. **WRITE IT DOWN** before you enter it in here.

One other word of warning, make sure of the status of your <CAPS LOCK> Key, especially with the use of the <TAB> key many inadvertently press the <CAPSLOCK> key due their close proximity to each other.

<TAB> to the OK button and press <SPACE> bar.

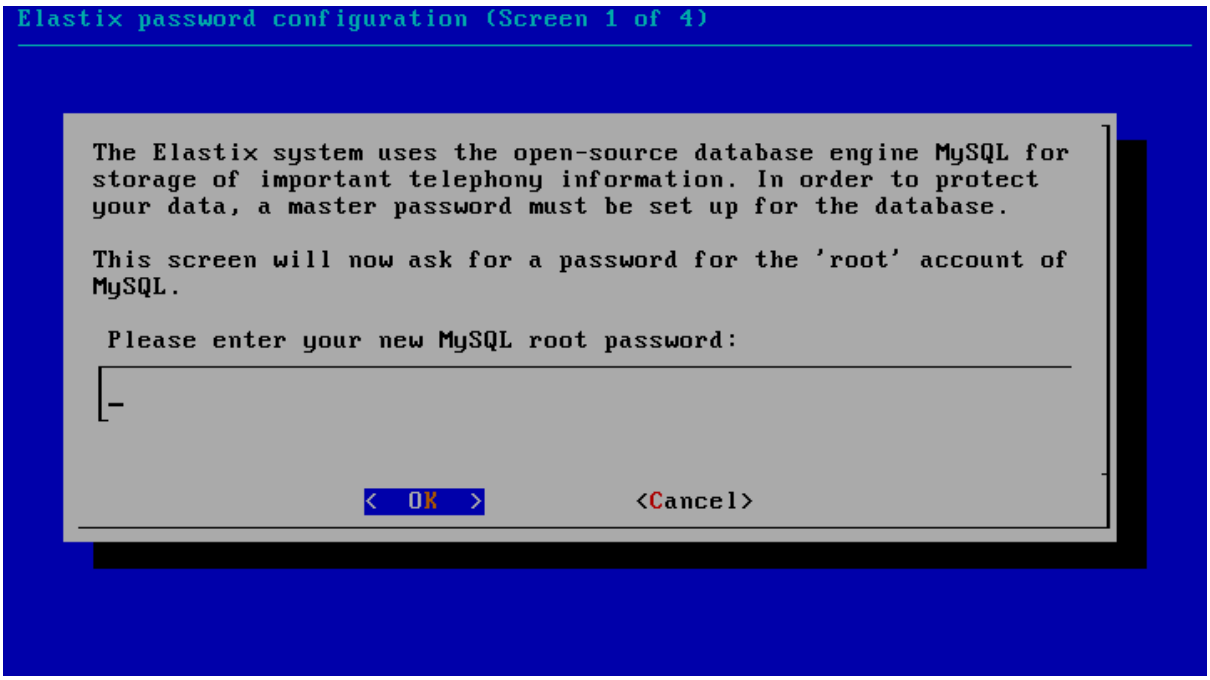
You will now witness a variety of screens pop up, which include the formatting screen, working out dependencies, transferring image, and finally you should see the Package Installation screen. All these screens will occur without your input. As a guide, the Package Installation screen should be started within a few minutes of your last press of the OK button. However, this can vary especially on the formatting screen if you have a large hard drive.



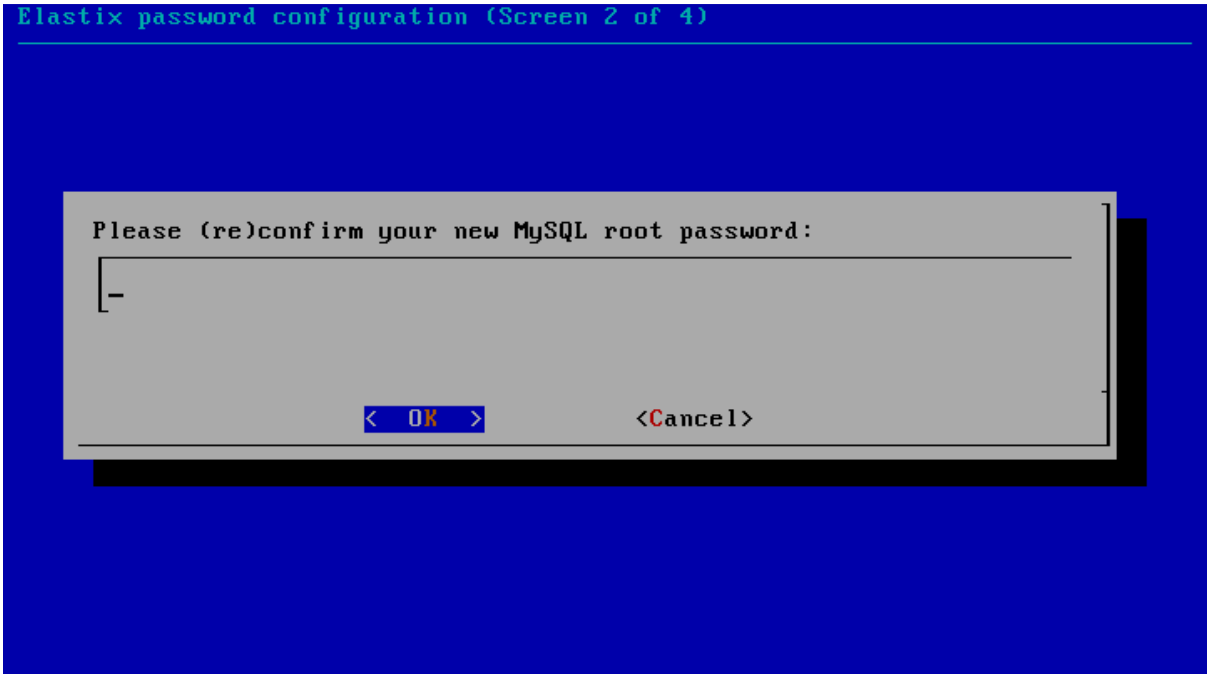

This Package Installation screen will probably run anywhere between 5 – 18 minutes depending on the speed of your machine / hard disks etc.

When it's finished the system will reboot, hopefully eject the CD (which you can now and should remove. You will notice on boot up, that the various lines will have a green OK next to each of them, except that there will probably be a red FAIL next to WANPIPE. This is ok, don't panic. This will only ever be a OK when you use the SANGOMA product, and have it configured properly.

The next screen that will pop up will be the password entry screen for MYSQL. Enter a different password than what you used for the previous ROOT password. Again **WRITE IT DOWN** now before you enter it. Check the <CAPS LOCK> status to make sure you are entering it correctly.

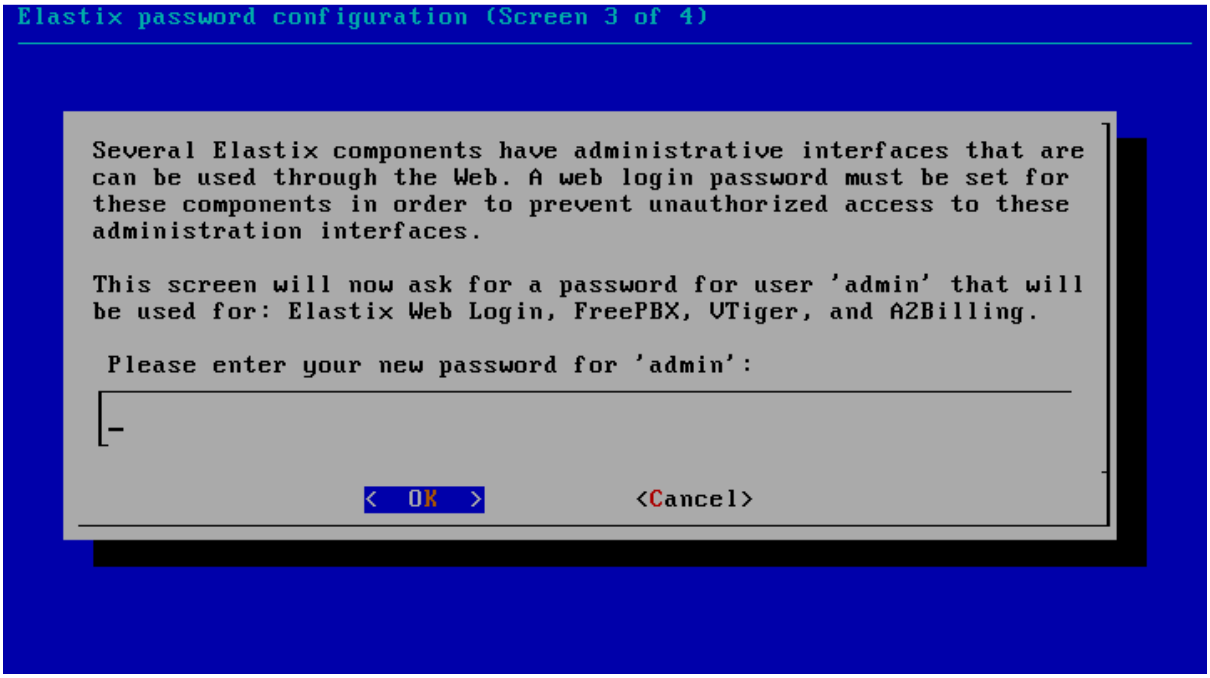



The next screen will ask you to confirm the MYSQL password you just entered. Enter it again

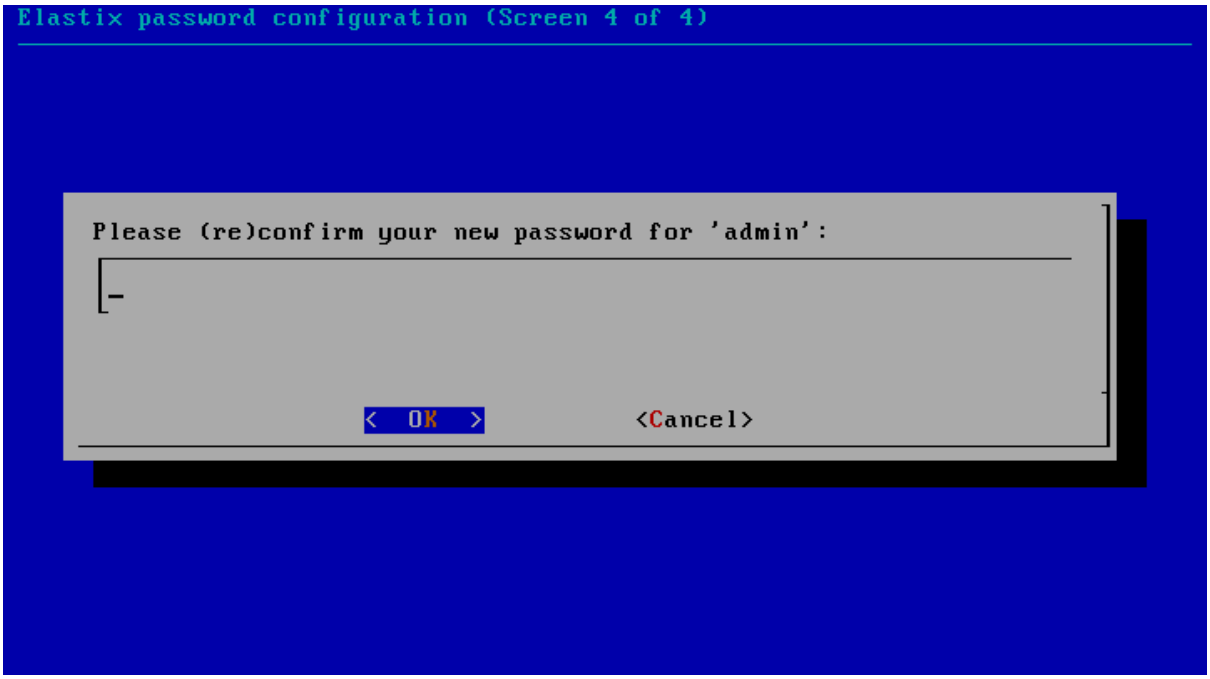



It will then run off and perform some password scripts which complete and then come up with the next screen.

This next screen will now ask you to set the password for the rest of the products included with Elastix. These products include the Elastix Web Login, Freepbx, Vtiger, and A2Billing. The user name is automatically **admin,** so you are just setting the default password here (don't worry they can be changed later within each application). It is important that they have a decent password from the start. **WRITE IT DOWN** before you enter it in here.




The next screen will ask you to confirm it.




Complete these steps and then you will be rewarded with the following screen after it has completed its startup scripts.



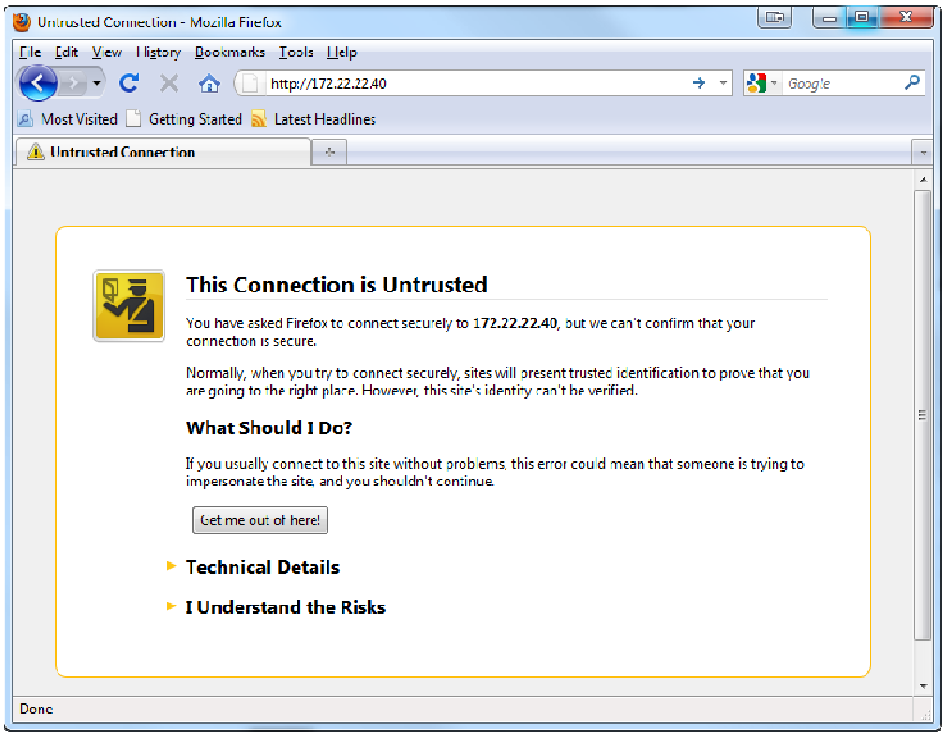

At this point, your Elastix system is installed.

Now you probably want to see the Web GUI to start exploring your Elastix system.

On a separate workstation, in your Internet Browser (Firefox is the preferred browser) enter the following address into the address bar:

http://{YourElastixPrimaryIPAddress} and press enter (e.g. http://172.22.22.40)

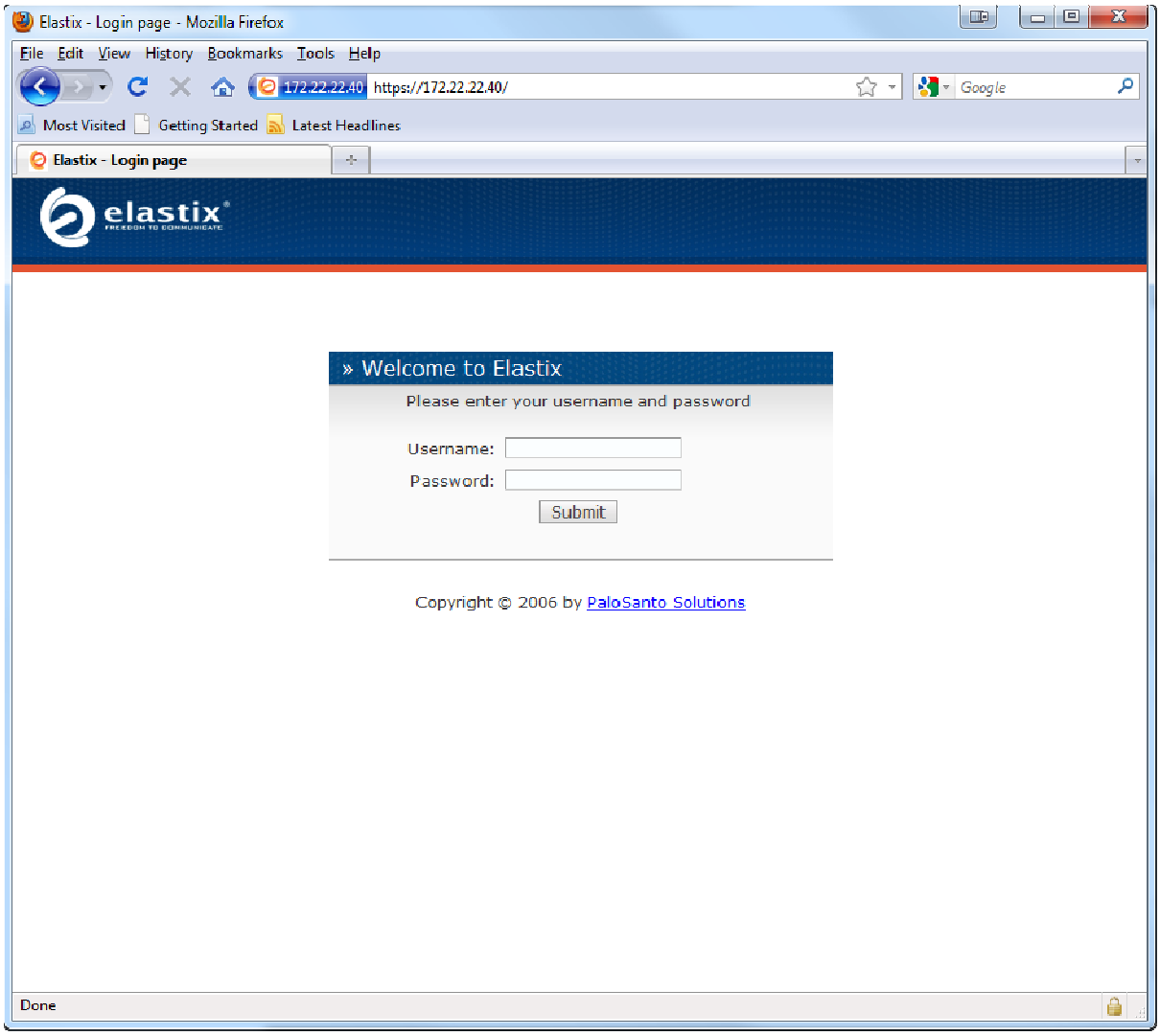
You will then see the following screen but don't panic



This has popped up as the Elastix system utilises SSL for all configuration pages, but your system does not have a valid SSL Certificate. Depending on your need you can purchase your own SSL Certificate, but again this is not the aim of this guide to get your SSL Certificates sorted, so in the meantime, we trust the system we are communicating with and we need to let the browser know this. (each browser/version has a different way of handling this, so you need to work out how it works on your browser.

On Firefox you click on **I Understand the Risks** and then click on **Add Exception** and when the next page shows click on **Confirm Security Exception.**

At this point, you will now be presented with the main Elastix login page as shown in the next diagram.




Use the admin login and password which hopefully you wrote down for the Elastix GUI.

That's it, now all that is left is to login and start exploring and configuring.

That's as far as this guide goes. You at least should now have a functioning system that allows you to follow the many other guides that take you through configuration and setup of your Elastix System.

## Troubleshooting

**My system won't boot off the CD that I created!**

This can be a multitude of issues that can't be answered without being in front of the system. The majority of these issues will be down to the machine you are using and how you set it up to boot of CD. Another common issue is that many Elastix installers grab one of their old decommissioned machines, which has been sitting in the cupboard for a couple of years and don't realise the CD is non-functional or poorly functioning. The simple test for both of these issues is to find another bootable CD (even Windows or one of those Live Linux CD's that come with the magazines). If this boots then you know you have your system set to boot of CD, if it doesn't then your issue is not with your Elastix Installation CD, but with your machine.

**OK , I have checked with another bootable CD and it boots, what else is wrong?**

As mentioned in this guide, you may not have used the correct mode to burn the CD. Have a look at the CD via another workstation. Does the disk show one file on it with the extension .ISO or does it show a number of files. If it only shows one file with the .ISO extension, then you have used the incorrect mode to burn the CD and it has not created a bootable CD. Take time to read about ISO images and burning them. This is not just an Elastix thing, but this will hold you in good stead for many other systems that require you to burn a bootable CD from an ISO image.

One of the other major issues that occurs is that the CD that you have created, whilst burnt correctly may not work in another CD Drive, especially if the machine is quite old and used heavily before it was decommissioned from its previous use. As such the CD Drive is slightly out of alignment or its lens is a bit dirty. One of the tricks performed in this case is to burn the CD at a much slower speed than the default maximum (e.g. 42x and above). Purposely burn the CD at say 4x. Yes it will be excruciating in the length of time it takes, but it may end up with a CD that works. Give it a try.

**I have commenced the installation program but it appears to hang soon after the initial Elastix screen after I pressed enter**

After the initial screen, it basically determines the hardware in your system, which includes the hard drive controller. It also makes use of your memory in your machine to load its initial image.

If you have a memory fault (especially one that is in the high range of the memory), this will cause unexpected errors that generally no one can provide you correct answers on. The only test is to find a quality memory test routine or if you some spare memory, switch it out. This issue does not occur often, but can happen.

The other main issue that does occur is that the Centos system that Elastix uses fails to detect the Hard Drive controller or worst still, hangs the machine whilst doing so. Elastix tries to maintain an up to date Centos distribution, but like all things, testing takes time, and also it is not good practice to always live on the knives edge using the latest and greatest of every product.

There are some things you can try yourself though, usually via the BIOS of the machine. One of the things to be aware of is that each machine manufacturer is trying to achieve maximum benchmarks with their system. This means that they may use the latest tricks with achieving maximum

throughput with their hard disk controller. Under the BIOS, have a look at the Hard disk controller settings. Especially on SATA systems, you may find a Enhanced Mode/ Combined Mode/ PATA only mode. Try changing these settings and see if it resolves the issue. As an example the Enhanced mode may not be compatible with the standard Linux drivers. The same goes for machines that have a RAID mode. Try turning it off and see if this resolves the issue. Agreed you may want RAID, but you are trying to analyse where your issue is at the moment.

**I have got a fair way through the installation and it doesn't give me an option for setting the Network cards, does that mean that it didn't detect the network cards?**

In a nutshell, it didn't detect your Network cards. Especially in the case of brand new Servers, it can take several months before CENTOS includes the drivers for the newer cards. You can proceed with the install and take a look at the other end and possibly learn how to add a driver to suit your network card. If you are lucky, you might be able to use a DKMS enabled driver (drivers are normally compiled into the kernel, but DKMS is available for some cards as a loadable module), but it varies on each card manufacturer whether they support this.

Before you start delving into this issue, I always offer a piece of advice and that is to go an grab a basic network card like the Realtek 8139 or now the Realtek 8111/8168 network cards that cost about $10 and use one of these, and disable those on the motherboard. 20% take up this advice, and the rest spend days trying to work their way around the issue or they start posting that Elastix should fix the issue (which is basically a Centos issue), or Elastix should upgrade to the latest Centos that came out last week because it has support for their card (forget that the upgrade might break many other major components).

The amount of time spent trying to work this issue out is not even comparable to the $10 spent on a new card. Agreed you may not have the spare slot available, and in this case it is understandable, and this will require your time to resolve the issue (if immediately resolvable).

Part of this angst is due to Windows users building their first Linux box and don't even consider the network card as a possible issue (in Windows you just load the driver). Most Linux people recognise this as an important point when selecting hardware to make sure that the Network card is supported and also the hard disk subsystem as well.

I keep about 10 x Realtek 8139 cards sitting in a box at all times, buying them when I see them or removing them from systems that are being decommissioned.

**I have not written down my Root password or it didn't seem to work. How do I fix?**

This is usually a PBCAK issue (problem between chair and keyboard) and there is very little this document or Elastix or anyone else is going to be able to help with.

The recommendation is to hit the Elastix forums. There are guides on the Internet telling you how to reset the root password, but for each Linux distribution and each boot loader this is different. Remember you are looking for the instructions that are for Centos 5 and Grub as the bootloader. If your system is in production, make sure you have all the backups you can on a remote system.

**I logged in as root and typed the address at the prompt, and it comes back as –bash: http://{YourElastixPrimaryIPAddress}: no such file or directory.**

It sounds like you typed the URL at the linux prompt. This is not where you type this URL.

The Elastix system does not include a graphical operating system, and does not include a browser. This URL is meant to be used on a separate workstation (Windows / Linux / MAC) in a browser such as Firefox.

If you have done this, then you may not be use to products like Elastix (and many other hundreds of server products that run on Linux) where it contains mainly a server product with a Web Service to configure it or modify it.

You may wonder why this is done this way, and this is make the system as sleek and responsive as possible. The use of minimal services running on the server reduces the possibility of non-essential services causing issues with the main core system, in this case your PBX system.

This is why Elastix and Asterisk are not built to run on Windows, and why PBX systems should not run on a Windows platform or even a Linux graphical desktop system. This reduces these sorts of issues. This also reduces the chances that security issues occur with less components, and also the possibility that a virus will bring your PBX system to a halt.

**Troubleshooting – how do I solve the issue quickly?**

Unless your experience is extensive, and I mean working with it almost every day, you are possibly not going to solve your issue quickly.

On 95% of systems that Elastix is installed on, it will install perfectly.

On the other 5% systems, you are going to suffer from Trouble-shooting blindness. No matter how good you are at solving issues, you are going to be frustrated that it had to be your system that has failed to install.

This frustration clouds your thinking, your belief that the system you have chosen specifically for this purpose, has let you down.

This troubleshooting of your system now needs your time and not your speed in trying to resolve the issue.

It means working through it methodically and not making assumptions, otherwise you are unlikely to solve your issue.

If it means that you need to go to your local newsagent to find a magazine with a LIVE Linux CD on it to test the CD booting, then that's what it is going to take. It is no good picking up a CD that you think was bootable, that you last used 6 months ago and appears to have coffee stains on it, and assuming it still works.

If your issue is with the network card, do the research and find out whether it is supported by Centos, and what version it was introduced. Find out what version you have in your Elastix system. Disable that second onboard Network card, and see if this resolves the issue.

Again this practice is not just related to resolving your Elastix install issue, but also any other issue you may have with your Elastix system. The amount of experienced people that fail to go back to basics to resolve issues are large in numbers.....we are all human....we have all done it.....

## Upgrading your system

One of the things that everyone seems to be driven to do after they have installed their Elastix system is upgrade everything they can.

It's usually because they have read the forums and other posts, which talk about upgrading.

Most of the stable releases are released because they have been tested. I won't say stable releases never have faults, but generally all normal basic functions should work. If something basic is not working, then something else is wrong. Performing a YUM update is in most cases not going to make it magically work. In many cases you could be introducing a new issue.

The upgrade mechanism should be used when you know the issue that you have is going to be fixed (i.e. another user has reported that the problem is corrected). You need to be aware that Elastix is made up of hundreds of components, including dependencies in the Linux operating system, which also have dependencies on the actual hardware of the system. Whilst a lot of time goes into looking for bugs, it is not a perfect world. Upgrades should not be taken lightly, and always before you do, make sure you have backups.

With backups done, then if your upgrade turns sour, it is possible to reconstruct a basic restored working system in less than 20 minutes. The number of people who fail to do this again is large, and then spend two days or more asking everyone how to solve their issue, and become frustrated partly because they performed this upgrade onsite just after the system has gone live because they thought it might solve the issue with a system recording that the Elastix owner gave them on a CD (which might have been just a format issue), and now the system has developed a new issue.

One area that is excluded from the above is performing module updates to Freepbx. Note that this says module updates. These are small changes to the modules such as Queues, IVR, Recordings, Ring Groups etc. Whilst again, I won't say that they never get released without issues, in general they are well tested and have a lot less dependencies due to the Freepbx design.

It is worth completing these updates immediately and regularly. However it is recommended, on Elastix, that you never use the Freepbx upgrade to go from one version to another e.g. version 2.7 to version 2.8 of Freepbx. There are a lot of customisations to Freepbx to get it to integrate into Elastix. Performing this upgrade will in many cases cause some sort of failure in your system.

Wait for the upgrade to be included in the Elastix YUM updates and here, again after performing a backup, is possibly a good reason to perform a YUM update.

| ELASTIX INSTALLATION SETTINGS & PASSWORDS | | |
|---|---|---|
| **Primary Network Card** | | |
| IP Address | | |
| Subnet | | |
| Gateway | | |
| Primary DNS | | |
| Secondary DNS | | |
| | | |
| **Secondary Network Card (if installed and if necessary)** | | |
| IP Address | | |
| Subnet | | |
| Gateway | | |
| Primary DNS | | |
| Secondary DNS | | |
| | | |
| **Product** | **Login** | **Password** |
| Elastix Root Password | **root** | |
| Elastix MYSQL Password | **root** | |
| Elastix GUI, FreePBX, VTiger, A2Billing | **admin** | |

Notes: