# LINPHONE

1. LINPHONE

For many people the internet and digital technology is changing almost every aspect of their life. Buying things online is becoming increasingly popular, MP3s are replacing CDs, digital photos are replacing film, Personal Digital Assistants are often used instead of a pen(!), you can watch videos and movies in your browser, research is helped with online libraries and sites like wikipedia, laptops are becoming entertainment appliances, many people do all of their banking online...the list goes on.

That means many industries are also being transformed. One industry which is, at this moment, going through a bit of a crisis through recent technological developments is the telecommunications industry. Previously controlled by monolithic 'telco' companies and corporations, the telecommunications industry is being challenged by a group of technologies which fall under the rather broad heading 'Voice over IP' (VOIP).
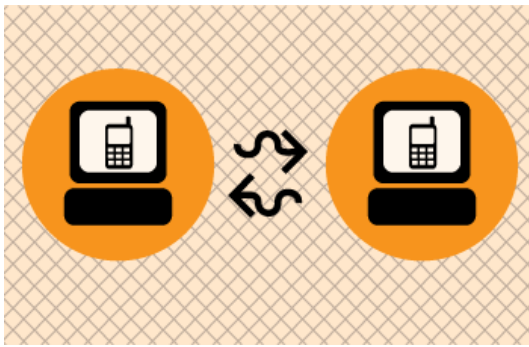
VOIP means using the internet to make phone calls. Either computer to computer calls, or computer to phone calls. There are many popular softwares that enable this, the most well known being Skype. However this field is very diverse and there are many many softwares that enable this kind of calling. Softwares which enable VOIP from your computer are called **softphones**. Softphones are used to make computer to computer calls, computer to phone calls, or make conference calls. Skype is a softphone and so is Linphone (there are many others).

However before you get too excited, you should know that you can't use just any softphone to call any other softphone. Skype, for example, only works calling telephones or other Skype software. You cannot use Linphone to call someone using Skype and you can't use Skype to call someone using Linphone. It *is* possible for Linphone to call some other types of softphones, but you need to know who you are trying to call first and find out what software they are using and how it is configured.

If you are lucky their softphone will be using a way to call known as the **SIP** protocol. This type of softphone is known as a **sipphone**. You can see things are already gone a little geeky and you haven't even tried to make a call yet.

Knowing who you can and can't call, and how, is the key to using VOIP software, and it can get tricky.

To cut a long story short, if you aren't already familiar with this area you may need a little real life geek help. Thats sometimes the way with emerging industries and technologies.

Linphone has a version with a **Graphical User Interface** (GUI) and a command line version called **Linphonec**. Both versions run on **Linux** and the command line version also works on many **Personal Digital Assistants** and mini computers (such as **Gumstix** http://www.gumstix.com).

2. WHAT IS VOIP?

VoIP is short for "Voice over Internet Protocol". It sums up the process of delivering voice over the internet in a manner similar to using a telephone. Actually, it is possible to use VoIP in many circumstances where you might have a computer network or you are connected to the internet. Voice over IP is a very specific type of Internet Telephony or IP Telephony. These latter two refer to any service using the internet that is similar to established "telephone" type services. For example, faxing, or sending messages (eg. SMS-like services) over the internet is "IP Telephony" whereas "VoIP" is only used to refer to *voice* over IP.

VoIP is on the rise with the popularisation of softwares like Skype (http://www.skype.com/) , OpenWengo (http://www.openwengo.com) , ichat (http://www.apple.com/ichat/)and Gizmo (http://www.gizmoproject.com/). Although these may seem like relatively recent phenomenon, VoIP geeks and commercial developers have been experimenting with this type of software for a long time. There are very many softwares available for making internet phone calls. Increasingly too these applictions are branching into video delivery for video chat, and video conferencing.

WHAT IS VOIP USED FOR?

Typically VoIP is used for making calls over the internet. You can do this using software telephones ("softphones") or hardware similar to traditional telephone handsets. If you use a VoIP software you can call other people from your computer and talk to them. Most often the person you call will also be using a softphone but in some circumstances it is possible to make calls to mobile phones, or other telephones. Services like Skype offer this kind of functionality. Skype is a softphone but the owners of Skype also offer services for making calls to 'landlines' or mobile phones. While computer to computer calls are often free in this kind of controlled telephony network, the latter services are charged for and this forms part of the business model for the service.

What many people don't realise is that services like Skype (etc) are closed networks, you cannot call people on other VoIP networks and other people on other VoIP networks cannot call you. So if you have an account on Wengo you cannot call someone on Skype etc. VoIP doesn't have to be this way, it is merely a strategy the businesses have developed to tie you into their networks and services, and its very similar to the way that traditional telephony providers (phone companies) have operated, for example, mobile phone companies often charge more calling mobile phones on competitive networks.

There is a growing number of VoIP services that operate using standards-based technology for creating accounts and making calls. Ideally, this means you could have an account with one VoIP service and call anyone using another service similar to how email works. If you have an email account with an internet provider you can send email to anyone with an email account no matter who provides their email services. Imagine if this were not the case, if email worked with a model like Skype you would only be able to email people using your service provider. XS4ALL (Internet Service Provider in the Netherlands) would only be able to email other people that had an account with XS4ALL. This would be ridiculous and would change the nature of the internet as we know it. So why do we accept VoIP providers that are trying to do exactly this? We don't have to and services like free-voip (http://freevoip.gedameurope.com/) are being established with a more open model.

WHAT IS A "SOFTPHONE"?

A softphone is the software you can use for making VoIP calls. There are very many of these softwares available, they are getting about as diverse as email applications. It is increasingly possible to also use a softphone embedded in your browser so you can make calls from your web browser without having to install any tricky software. There are too many softwares to list here but for a good list (although far from comprehensive) please look at the IPTEL websites listing:

http://www.iptel.org/info/products/sipphones.php

Softphones usually need some configuring to work and you will need to first have some form of VoIP account before you can configure the software.

Many softphones use a technology called SIP. This variety of softphone is sometimes also refered to as a siphone. SIP is a series of rules that the phone follows so that others can call you and you can call them. To use SIP you need a SIP account with a VoIP service. If you create a SIP account your will get a SIP address which looks exactly like an email address. For example, your SIP address might look like this:

flossmanuals@freesip.net

If someone wanted to call this account they would use the above details to place the call, in this way the analogy with using email is very strong.

INSTALLING
3. Installing Linphone on Ubuntu
4. Installing Linphone

3. INSTALLING LINPHONE ON UBUNTU

Software name : Linphone
Homepage : http://www.linphone.org/
Software version used for this installation : 1.5.1-1
Operating System use for this installation : Ubuntu 7.04
Recommended Hardware : 300MHz processor

If you are used to an Operating System like **Windows** or **MacOSX** you may have installed software by downloading it from a website and double clicking on the downloaded file, and clicking through all the licence agreements, configuration options etc. This is the 'old' way of installing software. The 'new' way is much smarter - you choose what you want to install from a list and press 'go'. The rest - finding the files, downloading the files, installing software, is taken care of by Ubuntu itself while you go and get a cup of tea or work on something else. It can't get much easier.

However, new ways take a little getting used to, and so we will first look at the basic tool needed to install software this way, and then how to use it to install Linphone.

SYNAPTIC PACKAGE MANAGER

The Synaptic Package Manager (SPM) is used for more than just installing software. It can also upgrade your entire operating system, and manage all software installed on your computer. However most people use SPM for just installing new software. Before you embark on this process there are a few concepts that you may wish to get familiar with. Its not crucial you understand them throughly, so just read the explanations and then let it soak in over time. The ideas behind SPM will become clearer with use.

What is a repository?

SPM can automate the installation of software on your computer because it has a direct connection to one or more online software repositories. These repositories are vast archives of softwares that have been pre-configured for installation on your operating system . When your computer is online SPM can connect to these archives, check what software is available for installation, and present you with a list of installable software. All you have to do is select the software from the list that you want. SPM then downloads the software from the repository and takes care of the installation process.

So SPM is actually a repository manager, it manages which repositories (there are many) you wish to access, and which softwares to download and install from those repositories.

SPM allows you to choose which repositories it accesses through its settings. The default repositories used by Ubuntu can be extended through the SPM settings so you can access a wider range of softwares. Ubuntu calls each repository by a simple name. They are : **Main**, **Universe**, **Multiverse**, **Restricted**. By default Ubuntu only uses the **Main** online repository. If you wish to access you the other repositories you must do this by changing repository settings of SPM.

What is a package?

When SPM downloads a software for installation it is in the form known as a 'package'. This means that it is a compressed archive of the software, pre-configured so that it will install nicely on your computer. If the package has been configured nicely, and Ubuntu spends a lot of time making sure this is the case, then many of the headaches that installing software can bring are taken away. One of the biggest issues with installing software on any form of Linux (Ubuntu is one of many types of Linux), are **dependencies**. Dependencies are all the other softwares required by a particular software. If, for example, I want to install a audio editor, that audio editor software may use some functionality of other softwares to do its job.

SPM takes the (often) dark art of dependencies away from you, and manages this itself. So if you wish to install a software and it has dependencies (and the list can be long), you don't have to work this out yourself, SPM knows already what is needed, finds it, and installs it along with the software you have chosen.

So, SPM, as well as managing which repositories you access, is also a package management software. Hence the name - Synaptic *Package Manager*.

apt

You don't really need to know about apt, so if you are on the verge of being confused then don't read this short section. If you are a geek wannabe then read on.

Ubuntu is a form of Linux that has derived from another form of Linux - Debian. This family of Linux has in common (amongst other things) the package/repository management system. Both Ubuntu and Debian use the **apt** system for managing packages. APT is actually an acronym short for **Advanced Package Tool**.

SPM is actually a 'front end' (graphical interface) for controlling apt. So SPM is the nice user interface that you see, but the real work is done by apt. There are other ways of managing apt also, such as the command line interface known as **apt-get**. In the world of Linux there are many varieties of Linux users and they have their own ways of doing things. In general its safe to say most Debian users use apt-get, and most Ubuntu users are happier using SPM.

CONFIGURING SYNAPTIC PACKAGE MANAGER FOR INSTALLING LINPHONE

To install Linphone on Ubuntu you will need to change the default repository settings of SPM as Linphone is not contained in the default repository. To do this you will need to open the Synaptic Package Manager and you can do this via the **System** menu. If you haven't changed the default Desktop of Ubuntu then the System menu can be accessed at the top left of your screen:
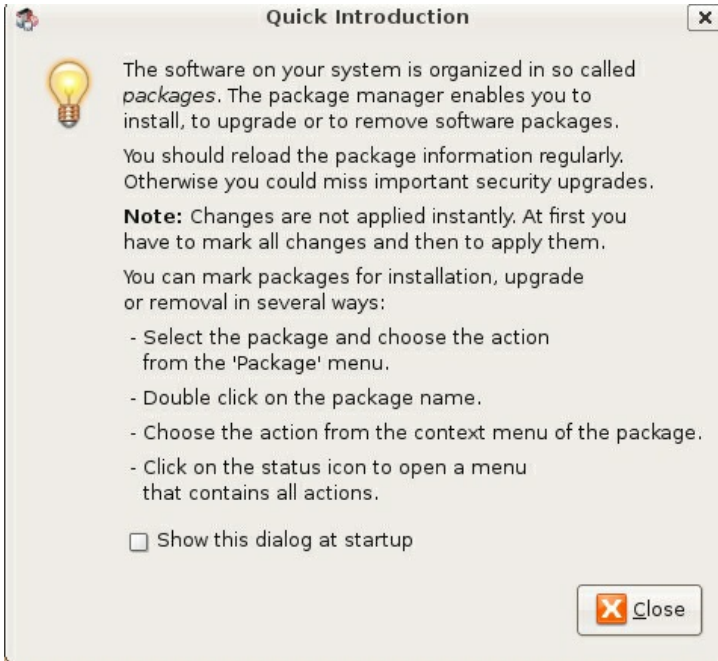
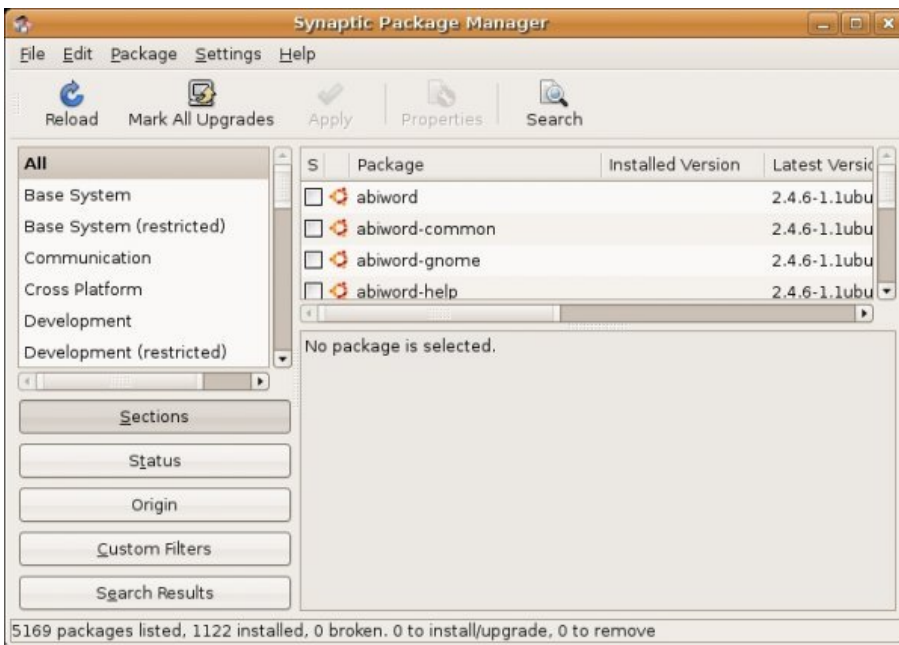If all is good you will be prompted for a **password**.
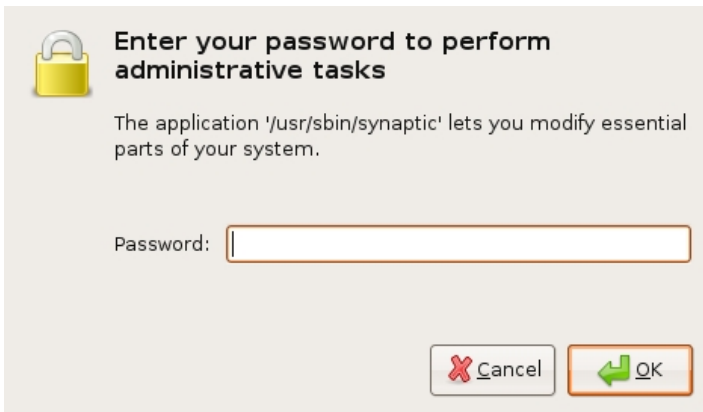
Here you must enter your password (the same one you use to log into the system). If you don't know the password then you have a problem and its probably caused by the fact that the computer you are using is not yours. In this case you have to find the computers owner and ask them for the password (which is usually not polite unless you know them well) or ask them to input the password while you look casually in the other direction.

Assuming the password entered is correct - you will now see the SPM open infront of you. It may be that you first see the following 'Quick Introduction' (this appears if you haven't used SPM before).

Quick Introduction

The software on your system is organized in so called
packages. The package manager enables you to
install, to upgrade or to remove software packages.

You should reload the package information regularly.
Otherwise you could miss important security upgrades.

Note: Changes are not applied instantly. At first you
have to mark all changes and then to apply them.

You can mark packages for installation, upgrade
or removal in several ways:

- Select the package and choose the action
  from the 'Package' menu.

- Double click on the package name.

- Choose the action from the context menu of the package.

- Click on the status icon to open a menu
  that contains all actions.

☐ Show this dialog at startup

[X] Close

Just click **Close** and move on. Lets look at the Synaptic Package Manager interface...

Synaptic Package Manager

File Edit Package Settings Help

Reload   Mark All Upgrades   Apply   Properties   Search

S	Package	Installed Version	Latest Versic
☐	abiword		2.4.6-1.1ubu
☐	abiword-common		2.4.6-1.1ubu
☐	abiword-gnome		2.4.6-1.1ubu
☐	abiword-help		2.4.6-1.1ubu

All
Base System
Base System (restricted)
Communication
Cross Platform
Development
Development (restricted)

No package is selected.

Sections

Status

Origin

Custom Filters

Search Results

5169 packages listed, 1122 installed, 0 broken. 0 to install/upgrade, 0 to remove
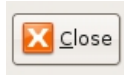
Lets not worry about the details of the interface for now. All we want to do is change the
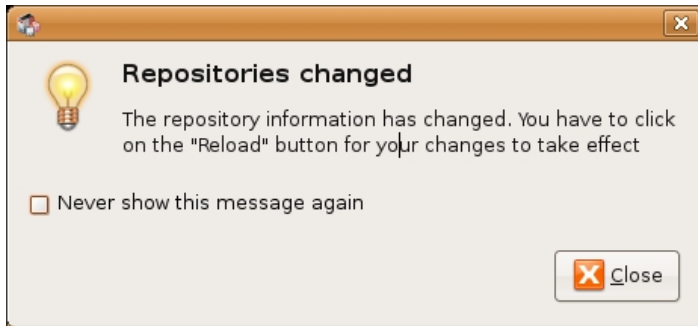repository settings. To do this click on the **Settings** and choose **Repositories**

Settings   Help

✗ Preferences
   Repositories
✦ Filters
   Set Internal Option...
   Toolbar   ▶
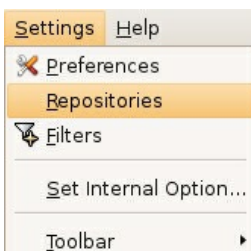
Now we get to where we can do some business. Make sure that **Community-maintained Open Source software (universe)** is checked :

☑ Community-maintained Open Source software (universe)
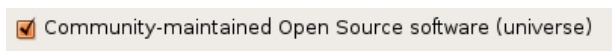
Now close that window by pressing the big close button at the bottom right.

Close

Next, you will see a warning telling you the repository has changed :

Repositories changed

The repository information has changed. You have to click on the "Reload" button for your changes to take effect

☐ Never show this message again

Close

Click the <u>C</u>lose button and move on to SPM so you can refresh the repositories as the warning suggests. To do this, do as the warning says - click on **Reload** :

Reload

You should then get some feedback saying the repositories are being updated and showing the progress.

Downloading package information

The repositories will be checked for new, removed or upgraded software packages.

Downloading file 12 of 19

Download rate: unknown

▷ Show progress of single files

Cancel

INSTALLING LINPHONE WITH SYNAPTIC PACKAGE MANAGER

Now the real business. Its pretty easy. Click on the nice big **Search** button:

Search

The search window will open and now enter 'linphone' in the field:

Great. Now press **Search** at the bottom right of the above window. The search should not take very long and when it is complete you will get a long list of software that can be installed, scroll down the list until you see **linphone** :

If you highlight **linphone** (by clicking once on the name) you will see some information about linphone displayed :

Now you can read the information if you wish but there is nothing critical in there. Best thing to do is just to double-click on **linphone**. By doing this you are 'marking' (choosing) the software for installation. If you do so then an additional window appears:
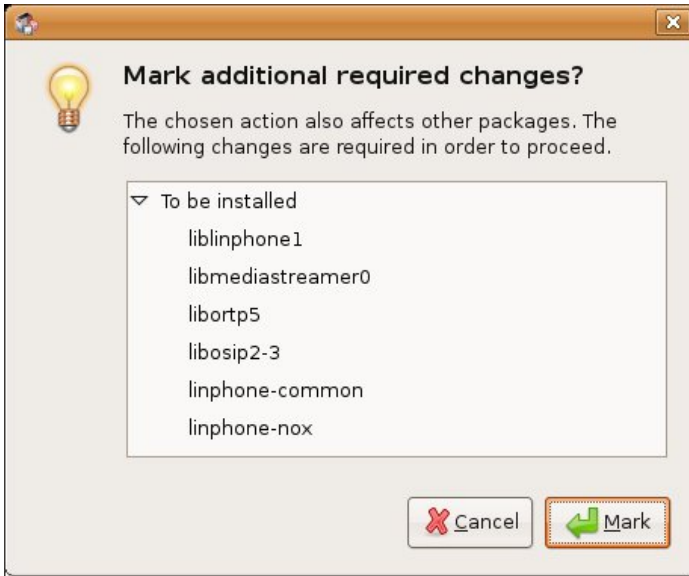
Now click **Mark**:

You have now told Synaptic Package Manager that you want to install Linphone and all the additional softwares that it needs to function. If all is well then the package will be highlighted:


You will see that there are two packages highlighted here. Infact if you browse up and down the list you will see other packages highlighted to. These are the softwares that will be installed so that linphone has all the functionality it requires.

Now press the **Apply** button with the nice big tick next to it :

Next SPM informs you of how much space will be taken by the installation (the **Summary** may contain different information on your computer) :
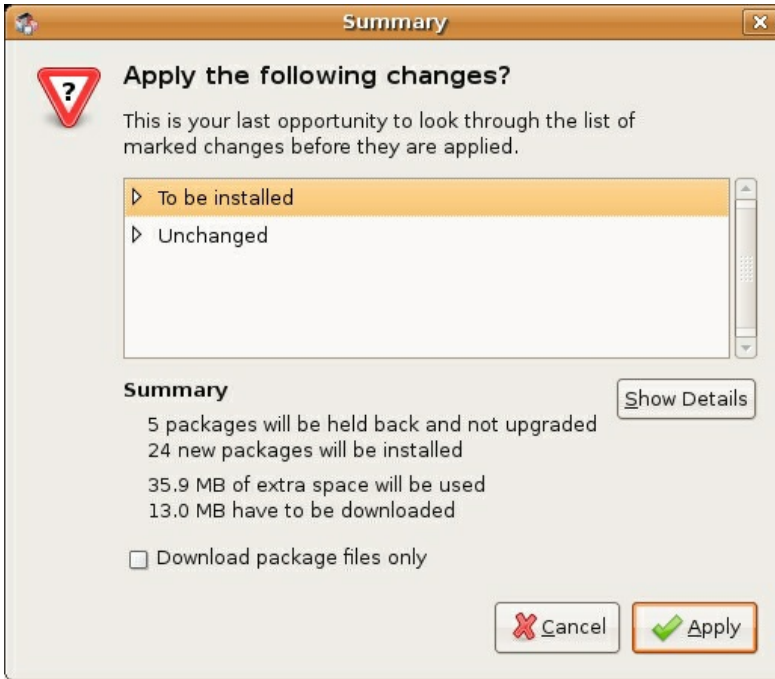
Now you can just click **Apply** at the bottom right of the screen and the installation will start. A progress bar will be shown (the number of files to be download may be different on your computer):

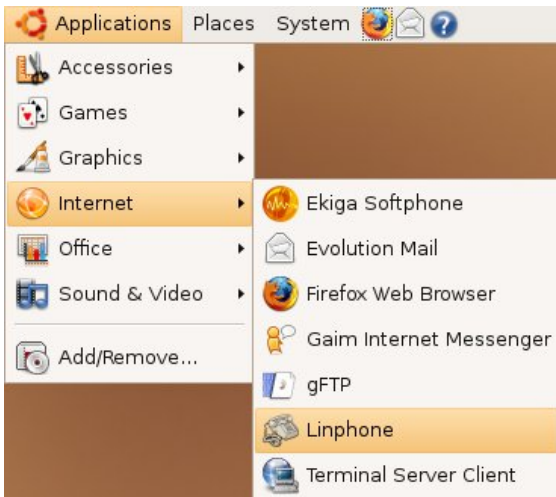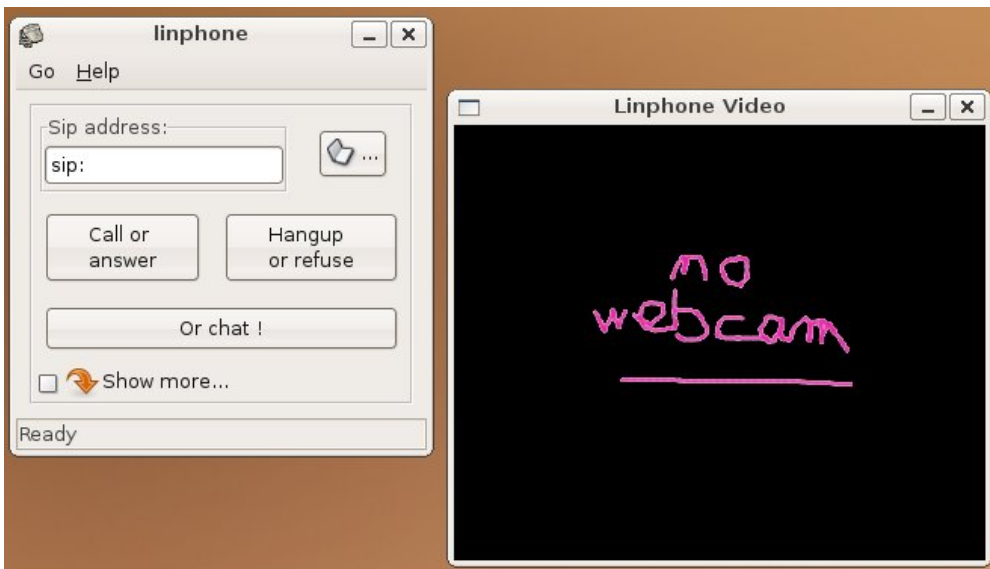When it is completed (downloading and installing) you will have this screen :
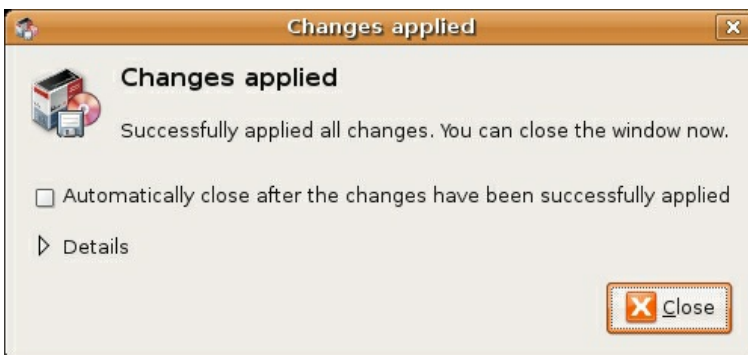
That means all is well. Pat yourself on the back and press **Close**. Synaptic Package Manager will then return to its original state. Close it :
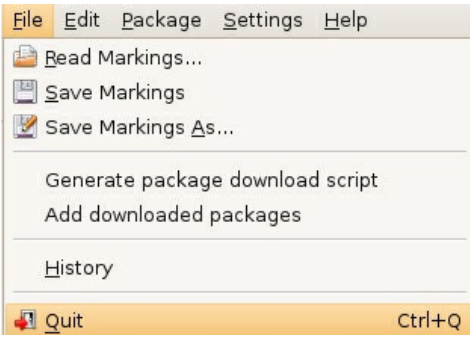
Now you can open Linphone...just browse to the **Applications** menu, choose **Internet**, select **Linphone** and release the mouse :

Then you should see Linphone! :

4. INSTALLING LINPHONE

DOWNLOADING

The source files for Linphone are linked from found on the softwares home site :

http://www.linphone.org/

The download pages are hosted on the **Free Software Foundations** software repositry.

http://download.savannah.nongnu.org/releases/linphone/

At the time of writing the most recent stable version of the software is version **1.3.5** , the file used for writing this manual is:

http://download.savannah.nongnu.org/releases/linphone/1.3.x/source/linphone-1.3.5.tar.gz

GETTING STARTED
5. Linphone Interface
6. Linphone preferences
7. Configuring Linphone

5. LINPHONE INTERFACE

There are two different types of interface for using Linphone - the GUI (Graphical User Interface) and the CLI (Command Line Interface). Here we will look at the GUI, which will look something like this:


INTERFACE ITEMS

The interface looks quite simple which is a big draw for the many Linphone users. Some softphones can be quite complex and possibly over burdened by functionality and difficult interfaces. Linphone however is deliberately built to be clean, simple and easy to use. Most of the functionality is determined through the "Preferences" window but for now we will inspect the top layer of interface elements (the ones you see in the above picture).

Sip address field

The "Sip Address" field is at the very top of the interface and looks like this:
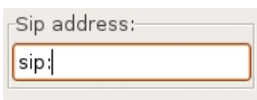
A SIP address is a method that Voice over IP software uses to call other softphones. It is similar in its use as an email address or a phone number. So when you enter a SIP address in this field you are telling the software who it is you wish to call. The structure of a SIP address looks exactly the same as an email address. An example might look something like this : "adam@flossmanuals.net". Althought the address might *look* like an email address it is a very different thing, so do not make the mistake of trying to call your friends by simply entering their email address in this field. When you call someone with Linphone the SIP address must first have a "sip:" before it. This identifies the method (protocol) Linphone must use to make the call.

Address book button

You can store SIP addresses in Linphones address book. This means you don't have to keep remembering the addresses of those you wish to contact. It is similar to an address book in a mobile phone. To access the phonebook push the button that looks like a phonebook:

Call or Answer button

The "Call or answer" button is used for just that - making Linphone call the address you have entered in the "Sip address" field, or answering an incoming call.
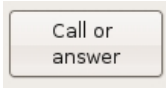
Hangup or refuse button

By pushing this button you will either hang up (stop) an existing call, or you will refuse an incoming call.
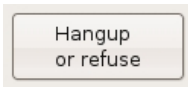
Chat button

The button marked "Or chat!" opens a chat window so you can request a chat with person whose address is in the "Sip address" field.
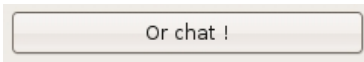
6. LINPHONE PREFERENCES

Linphone has about the most simple preference interface of any <u>softphone</u>. The window for setting the preferences can be opened by clicking on "Go" on the top menu and selecting "Preferences" :

The above proceedure will open a window that looks something like this:
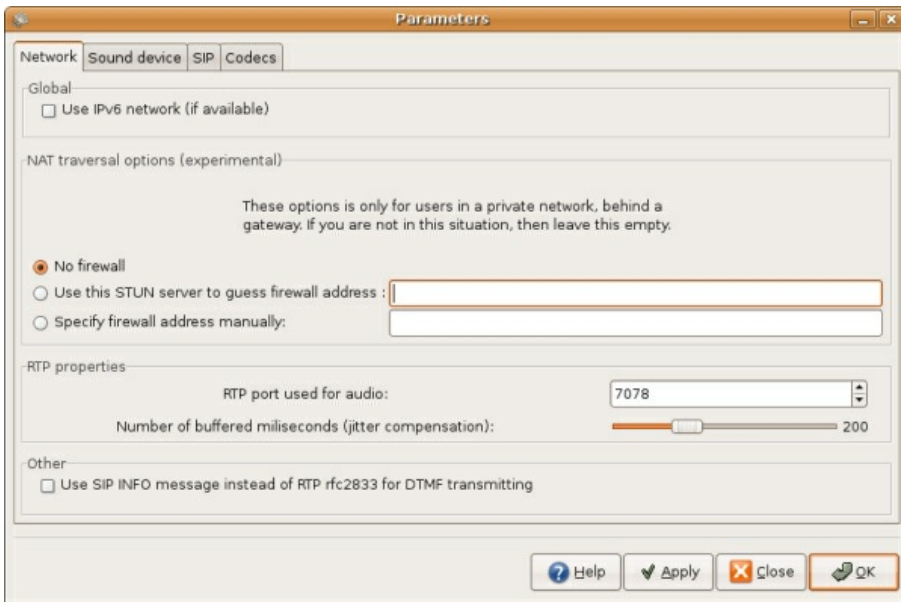
The interface has four tabs : "Network", "Sound device", "SIP" and "Codecs".

NETWORK PREFERENCES

The "Network" tab of the "Preferences" allows you to determine how Linphone should send data over the internet.

Global option

Essentially there are not enough <u>IP Addresses</u> for all the types of objects that would like to have one (usually computers but also handhelds personal organisers, mobile phones etc). An IP Address is the group of numbers that identifies your computer on the internet. It looks something like this : "192.168.0.123". Because there are not enough combinations of these number groups to account for every device that needs to connect to the internet a new way of addressing is being developed, this is called "IPv6". An IPv6 address might look something like this : "E2D6:0000:0000:0000:01B4:7BD8:D0A3:1220"

The option that Linphone offers here is to use an IPv6 address. To select the option means that you have an IPv6 address. If you don't know anything about this then chances are you are using the IPv4 IP addresses and you do not need to select this item.

Nat traversal options (experimental)

Most probably you will not need to worry about these settings. If you can connect to other Linphones or softphones no problem then just leave the default settings ("No firewall" checked :

If you are in a private network, which is quite possibly the case if you connect through an office network, internet cafe, or you have a hub or router at home, then you may have some difficulties using Linphone to conenct to other Linphone that are not in the same network. This is because either Firewalls may block SIP traffic (the method Linphone uses to transfer voice data over the internet) or there is a device known as a NAT router between your computer and the internet. NAT is "Network Address Translation". A "NAT router" sits between the public Internet and a local ("private") network. The NAT router correctly forwards requests from computers on a local network to computers on the internet and vice versa.

However this can cause probles for SIP which is the method ("protocol") that Linphone (and other softphones) use to make a connection with another softphone over the public Internet. If you are having problems calling other softphones when you know that the address you are calling exists then it could be because your computer is connected to the internet via a NAT. In this case you need to tell Linphone that this is the case. Linphone then offers two ways for this problem to be solved.

STUN

The first is to use a STUN server as an intermediatry. STUN stands for **S**imple **T**raversal of **U**DP through **N**ATs (Network Address Translation). Essentially this means that the Linphone will communicate with a STUN server and the STUN server then tells Linphone the public IP address of your NAT router. It also reports to Linphone which <u>port</u> was opened by the NAT device for incoming traffic. Linphone then uses this information for connecting with a VoIP server or other softphones. If you know the address of a STUN server (and there are some free ones on the internet you can use) then enter the address of the STUN server in the first field :

A STUN server address looks like a URL. An example might be : "stun.myserver.com". In which case you would enter this information in the field and click the circle to the left which selects this option.
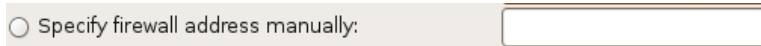
> Use this STUN server to guess firewall address : stun.myserver.com

Note : the above settings are for the purposes of illustration only, there is no such existing STUN server address.
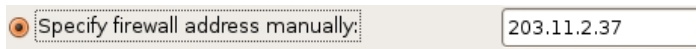
Firewall Address

If you know the IP address of your NAT router you can enter this into the second field :

> ○ Specify firewall address manually:

In this case the address of the NAT router might be "203.11.2.37" (this is a fictional address), and hence I would enter this information and click on the circle to the left to ensure this option is enabled:

> ● Specify firewall address manually: 203.11.2.37

Note : the above settings are for the purposes of illustration only, there is no such existing NAT router address.

RTP properties

RTP stands for "Real Time Protocol". This set of rules ("protocol") is what Linphone uses to transfer audio data over the internet.

RTP port

Because a computer must handle many different types of data transfer over the internet and many different sets of rules (protocols) for different types of data, the computer assigns a "port" for each type of data. Ports are identified by a number between 0 and 65535. Web browser traffic, for example, uses port 80. Linphone uses by default port 7078 for RTP traffic. Changing the RTP port doesn't create a problem: it's dynamic, there is no risk in doing it. However it must always be an even number (eg. 7078, not 7079).

Jitter

In order to ensure a nice smooth delivery of audio (voice), Linphone needs to hold some data in a "buffer". It stores this data so that it can release it smoothly, giving you nice smooth sounding audio. If you are having problems with the audio 'breaking up' or 'stuttering' then you may wish to increase the time set for "jitter compensation". Do that by sliding the marker to the right (you will see the number to the right of the slider increase).

SIP info vs RTP rfc2833

DTMF is short for "dual-tone multi-frequency". This is the way that a telephone communicates with a telephone exchange or switching center. DTMF is familar to most people as "touch-tone", where different tones co-relate to different numbers on a phones key pad. These tones are actually being sent down the telephone line when you press them and they communicate with the telephone switching centers so your call gets sent to the right place. It is a kind of audio signalling process for telephoney. The system is known as "dual-tone" because each key is represented by two tones.

Incidently "touch-tone" is a trademark and is just one version of DTMF .

The option "Use SIP INFO message instead of RTP for DTMF transmitting" determines which technique Linphone should use for carrying the DTMF information. If you choose "SIP INFO" (by checking the box) the DTMF information is actually represented numerically and not by a tone. If you choose RTP (the default) then tones are used and transported using the Real Time Protocol. Generally SIP INFO is not used by softphones. So you should probably leave this item in its default.

Other
☐ Use SIP INFO message instead of RTP rfc2833 for DTMF transmitting

SOUND DEVICE

This section determines the input and output devices you will use for audio. Generally these are correctly guessed when you install Linphone so only change them if you are experiencing difficulties with audio, or if you have more than one sound card or perhaps an external sound card which you would like Linphone to use for audio.

Playback sound device

This is the device that Linphone should use to play back audio. You can select from the options in the drop down menu on the right.

Playback sound device: ALSA: default device   ⬍

Capture sound device

This is the device that Linphone should use to capture audio. You can select from the options in the drop down menu on the right. Note : thie choices here do not determine if you use a "mic" or "line" audio input, this is determined by the below option.

Capture sound device: ALSA: default device   ⬍

Recording source

With most soundcards you have a choice of what kind of audio input you use. The two options are generally either "micro" (microphone) or "line" (line-in).

Recording source: micro   ▾

You can choose these options from the drop down menu.

Ring sound device

This is the device that Linphone should use to sound a "ring" or call alert. You can select from the options in the drop down menu on the right.

Ring sound

You can choose what sound is used as a "ring tone". To choose a sound file press "Browse" and browse your computer for a "wav" file (sound file). Once you have chosen a sound you can preview it by pressing the "Listen" button.

Enable echo-canceller

Often if you make a call to another softphone you may here an echo of your own voice. This can make concentrating on the call very difficult as the echo is quite disruptive. The best way to avoid this is for the caller and the listener to both wear headphones. Failing this you can try and use software echo cancellation. If you check this box, then you are choosing to use echo cancellation. This means that the person on the other end will not hear an echo. If you don't wish to hear an echo then the person on the other end of the call also needs to select a software echo cancellation in their softphone.

SIP

The SIP preferences could also be described as your 'account settings'. There are also some settings which are more technical in nature.

SIP itself is an abstract entity, it is short for "Session Initiation Protocol". SIP is the signaling protocol (a 'protocol' is a set of rules), it does not carry voice, it makes software phones agree on how to setup the voice and perhaps video streams, and signal when the call terminates.

When you want to make a call using Voice over IP you need a SIP account. Having a SIP account is like having a phone number or an email address. You need this account so people can call you and you can call others.

SIP port

This is the port that Linphone will use for SIP. A "port" is also an abstract entity that programmers use for transfering different types of information. Ports are identified by a number ("port number"). The default port number used by SIP is port 5060. Don't change this port number unless you have a known reason for doing so.

SIP port

Run sip user agent on port: 5060

Identity

This is where you enter the information for your SIP account. You need to know the hostname (this may look like a domain name or a IP Address) of your SIP account, and your username.

Your sip address: sip: @

If you are not using a "remote service" (see below) for your account then in the first filed just enter any name, and in the second you can enter the hostname of your own machine. If you don't know what your hostname is then Linphone can try and guess it for you. If you choose this option Linphone will simply use the IP address of your computer in this field. If you want Linphone to do this you must select the option box next to "Automatically guess a valid hostname":

☑ Automatically guess a valid hostname

7. CONFIGURING LINPHONE

The configuration details are stored in a text file. If you are using the command line version of Linphone ("linphonec") the configuration file is stored here: "/home/username/.linphonerc". In this example "username" would be replaced by your username, for example if my username is "adam" then I would find the linphonec configuration file in this location: "/home/adam/.linphonerc".

The configuration of the non-command line version (the version with a Graphic User Interface), is done through the interface. However all the settings are stored in a file too, you don't have to touch this file but if you are curious you can find it here: "/home/username/.gnome2/linphone".

If appropriate configuration file doesn't exist, it will be created after starting Linphone. In case of linphonec, the file will be copied from "~/.gnome2/linphone if it exists.

The variables and format is the same for each. The below details each variable:

[NET]

All settings regarding the local network go here, this includes the speed of the connection and the IP number of the NAT should there be one.

con_type

It's a setting to tell linphone how much bandwidth it can use:
0=analog 28k modem
1=56k modem
2=128k modem
3=minimum ADSL modem
4=unlimited (Ethernet)

con_type is deprecated and no more used by linphone>=1.4.0, in favour of upload_bw and download_bw.

use_nat

0=don't use the NAT setting
1=use the NAT setting

nat_address

This value can be used to override contact header IP. This is usefeul to supress automatival too "smart" IP address selection if you have more IPs. Put the IP number of the NAT router here.

download_bw

The bandwidth you have available for incoming data. This is noted in kbit/sec. A setting of "0" means unlimited bandwidth. Specific allocations of bandwidth may exclude the use of codecs that require more bandwidth than the setting chosen. Has similar purpose as the con_type. Different codecs are offered in SDP when different bandwidth is available.

upload_bw

The bandwidth you have available for outgoing data. This is noted in kbit/sec. A setting of "0" means unlimited bandwidth. Specific allocations of bandwidth may exclude the use of codecs that require more bandwidth than the setting chosen. Has similar purpose as the con_type. Different codecs are offered in SDP when different bandwidth is available.

use_stun

STUN is used by Linphone for traversing NAT routers. STUN stands for **S**imple **T**raversal of **U**DP through **N**ATs (Network Address Translation). Linphone can be a STUN client, in which case it will send a request to an external STUN server. The STUN server then tells Linphone the public IP address of the NAT router. It also reports to Linphone which port was opened by the NAT device for incoming traffic. Linphone then uses this information for connecting with a VoIP server or other soft phones.

0=use STUN
1= don't use STUN

stun_server

The address of the STUN server to use. The format will look something like this: stun.me.com

[SIP]

All details regarding your SIP configuration go here. SIP has two kinds of addresses:

1. **SIP Address of Record (AOR)**. This is the address people use to call you, the format looks like an email address.
2. **SIP Contact Address** is the temporary address and is determined by what IP address you currently have, the device name, and the port number you are using for SIP. This address is usually temporary and stored in memory. When you register with a SIP server, the server maps this address onto your SIP Address of Record (AOR).

sip_port

The port on your computer that is used for SIP traffic (default is "5060")

guess_hostname

0=don't guess the hostname of your computer
1=guess the hostname of your computer (use this if you don't know it)

contact

Put here the SIP Address of Record for your account. The format should be: sip:accountname@siprovider

inc_timeout

This is the timeout setting for incoming calls. If you do not make it to answer an incoming call after the time set here then linphone will timeout. The setting is measure in seconds and the default is "15" (seconds).

use_info

0 = don't use SIP INFO messages for DTMFs
1 = use use sip info messages for DTMFs

use_ipv6

Essentially there are not enough IP Addresses. An IP Address is the group of numbers that identifies you on the internet, they look something like this: "192.168.0.123". Because there are not enough combinations of these number groups to account for every device that needs to connect to the internet a new way of addressing is being developed, this is called "IPv6". An IPv6 address might look something like this: "E2D6:0000:0000:0000:01B4:7BD8:D0A3:1220"

If you are in a IPv6 network then you can use these addresses instead of the more common IPV4. Linphone is not able to combine different IP protocols at the same time (e.g. SIP over IPv4 and RTP over IPv6).
0 = don't use IPv6
1 = use IPv6

default_proxy

Linphone has a section in the config file for storing different registration server information. These are numbered (starting at zero). Put the number here for the index of the registration setting you wish to use. "-1" means do not use a proxy.

[RTP]

audio_rtp_port

The port number used by the RTP protocol for audio (default 7078)

video_rtp_port

The port number used by the RTP protocol for video (default 9078)

audio_jitt_comp

Number of milliseconds of audio buffered before playing, measured in seconds (default 60).

video_jitt_comp

Number of milliseconds of video buffered before playing, measured in seconds (default 60)

[SOUND]

playback_dev_id=ALSA: default device
ringer_dev_id=ALSA: default device
capture_dev_id=ALSA: default device
rec_lev=80
play_lev=80
ring_lev=80
source=m
local_ring=/usr//share/sounds/linphone/rings/oldphone.wav
remote_ring=/usr//share/sounds/linphone/ringback.wav
echocancelation=0

[VIDEO]

enabled=0
show_local=0

[AUDIO_CODEC_0]

mime=PCMU
rate=8000
enabled=1

[PROXY_0]

reg_proxy=sip:papercuptelephone.org
reg_identity=sip:adam@papercuptelephone.org
reg_expires=900
reg_sendregister=1
publish=0

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AUTHORS

CONFIGURING
© adam hyde 2006, 2008
Modifications:
Petr Pisar 2007
Thomas Middleton 2008

CREDITS
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LINUX (ADVANCED)
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Modifications:
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