

LET PENGUINS FLY:

Why Should We Adopt Open Source Software

(Summary: This talk explains why OSS should be adopted and what strategy is to be used in shifting over to Linux.

This talk was delivered by Chief Justice Yatindra Singh at Chhattisgarh High Court, Bilaspur on 24 November, 2012 explaining the reasons to adopt Linux and the strategy adopted in shifting over to Linux.)



नमस्ते, जय जोहार and a very good morning to all of you.

Chhattisgarh is a beautiful State and it is a privilege and honour to be the chief justice of the Chhattisgarh High Court. I am happy to be here.

I have learnt many new things here and it has been good education for me but this place also requires some changes. I am here to speak about one fundamental change; it is about computerisation, regarding shifting over to open source software (OSS). This is also recommended by e-committee. However before this change is made, it would be appropriate to understand, as to why it is being made: this is the reason for today's talk.

Did I say change, shifting over to OSS! Well, what this title 'Let penguins fly' got to do with shifting over to OSS? Do penguins fly? Is it possible? Or am I trying to make a fool out of you?

To tell you the truth, the title is not original: I am not the first one to use it. It was earlier used about four and half years ago. At that time, the morning edition of British newspapers reported that some 750 miles south of the Falkland Islands, while filming on King George Island, the BBC Camera crew discovered a colony of Adélie penguins that could fly. The programme presenter had said:

'We'd been watching the penguins and filming them for days, without a hint of what was to come. But then the weather took a turn for the worse. It was quite amazing. Rather than getting together in a huddle to protect themselves from the cold, they did something quite unexpected, that no other penguins can do.'

The newspapers from the BBC sources had also reported,

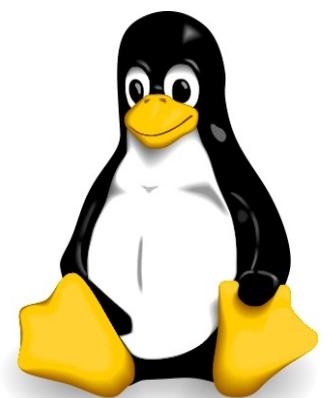
'The film reveals nature's stunning glory exciting and unexpected ways, so much so that it defies belief. Not only did it create a vivid and emotional experience for the viewer, it also illustrated just how bold and simple Darwin's idea of natural selection was. The BBC viewers would be able to see that the penguins not only taking flight from the Antarctic wastes, but flying thousands of miles to the Amazonian rainforest to find winter sun.'

There was a BBC footage¹ that showed penguins flying. This was to be, a part of its new natural history series, 'Miracles of Evolution'. The picture that you see is from that footage.

In fact, the penguins are a group of aquatic, flightless birds living almost exclusively in the southern hemisphere, especially in Antarctica; their wings are useless for flight: they have become flippers. They are well adapted to aquatic life. Their white belly and dark backs camouflages them. A predator in the sea looking them up from below has difficulty distinguishing between a white penguin belly and the reflective water surface. The dark back camouflages them from above.

The date this title appeared in the morning edition of British newspapers was 1st April 2008. Alas, it was a fools' day prank and not true :-)

I am not repeating that prank today. Penguin is an official symbol of Linux, an open source software. Allahabad High Court is a success story of Linux and open source applications. Penguin does fly there.



Symbol of Linux

1 The footage of the BBC can be seen here:
<http://www.youtube.com/watch?v=9dfWzp7rYR4>

There were valid reasons to adopt open source software at Allahabad High Court; similar reasons apply here. The Chhattisgarh High Court should also adopt OSS: penguins should also fly here. It is not possible without your help This is the reason for this talk and the title for the talk.

This talk is divided into the following four parts:

- (i) Why open source software (OSS)
- (ii) What is OSS;
- (iii) Advantages of OSS;
- (iv) Strategy in shifting over to OSS.

WHY OPEN SOURCE SOFTWARE

The beginning of the last century witnessed the emergence of a semi-clad Indian, referred to as 'half naked Fakir' by Winston Churchill. His philosophy was,

'Means are more important than the end: it is only with the right means that the desired end will follow.'

To the charge that 'means are after all means', he would say, 'means are, after all, everything'. His name was Mohandas Karamchandra Gandhi – known to the World as Mahatma Gandhi, father of our nation.

Gandhi's philosophy is deep rooted in law too. Lord Denning, one of the greatest judge of 20th century, in *R Vs IRC Exparte Rossminster Ltd 1979 (3) All ELR 385* held,

'But it is fundamental in our law that the means that are adopted ... should be lawful means. A good end does not justify bad means.'

In the world of information technology,

- The end is dissemination, communication, and retrieval of information; and
- The means are, how to achieve it, implement it; the kinds of software to use, the kinds of standards to adopt, the kind of formats to employ?

OSS are good means and we should adopt them. In order to understand, why they are good means, we should first understand what is OSS.

WHAT IS OPEN SOURCE SOFTWARE (OSS)?

The software consists of two parts

- Source code; and
- Object code.

Computers only understand 'machine language' or 'machine code' i.e. instructions that consist of a series of 0s and 1s. In earlier days, a computer programme used to be written directly in machine language by punching a card.



Punch card

The punched slot or un-punched slot indicated requisite information to the computer. However, the process was slow and tedious. Such a programme, although intelligible to the computer, was virtually unintelligible to anyone except an equally skilled programmer.

Nowadays, computer programmes are written in high level computer languages using compact English words. This can be understood by humans though not by the computers. This is known as the source code.

The languages also have a programme called compiler and with its help, source code is compiled into the language that computers can understand. This is called object code or machine code. This runs the computer or any application therein.



```
#include "proxy.h"
#include "signals.h"
#include "sslconn.h"
#include "sound.h"

struct PidginCore
{
    char *ui;
    void *reserved;
};
static PidginCoreUiOps *_ops = NULL;
static PidginCore *_core = NULL;
```

Source code of Pidgin

Protection—Object Code

There was some debate as to how the object code is protected but Article 11 of the TRIPS mandates its members to provide authors with the right to authorise or to prohibit commercial rental of at least computer programmes and cinematographic works. This has also been so provided in our laws under Section 14(b) of the Copyright Act and now in our country, as well as in almost all other countries in the world, the object code is protected as copyright.

Protection—Source code

Source code is a kind of description. Copyright lies in the description and source code of a computer programme—being description—is a literary work within the meaning of Copyright Act. If it is not published then it is protected as a trade secret. In case it is published it is protected as a copyright and it may also be protected as a patent but that is very debatable issue.

Copylefted, Free, and GPLed software

Everyone is not using Intellectual Property Rights (IPRs) to hoard rights in the software. Some are using them in such a way that no one is able to hoard them. Using copyright, they are doing just the opposite. It is for this reason it is called copylefting. This happens if software license has the following conditions:

- (i) The software is royalty free;
- (ii) The source code is disclosed;
- (iii) There is freedom to modify the software; and
- (iv) Anyone who redistributes the software, with or without changes is required to pass along similar freedom to others i.e. disclose the source code and permit

further modification.

Copylefted software is also called free software as there is freedom to modify it. General public licence (GPL) contains conditions that copyleft a software. Software, under a GPL licence, is also known as GPLed software.

Open Source Software (OSS)

The philosophy of copylefted conveyed an anti-business message. Though, this is not so: it is merely a way of doing business. In the late 1990's, a group of free software enthusiasts got together in California and started a consortium – called Open Source Initiative (OSI). They also drafted ten guidelines and if the license or conditions under which the software has been released satisfies these guidelines then they called it Open Source Software (OSS). At present, sixty seven licenses have been identified as satisfying these ten conditions.

Among the ten conditions, the three important ones are,

- (i) The software is royalty free;
- (ii) The source code is disclosed; and
- (iii) There is freedom to modify the software.



OSI Logo

The guidelines do not contain the fourth condition of Free Software. Thus OSS is more comprehensive. All Copylefted is OSS but all OSS is not Copylefted software. The sphere of OSS is bigger than Copylefted/ free/ GPLed software.

Anyone can copy, distribute or modify OSS. No one infringes copyright by merely using or modifying it. This does not mean that it has no copyright. There is copyright in OSS. In fact, OSS is copylefted by using copyright. Anyone who uses OSS contrary to the conditions governing the license, not only breaches the contract but also infringes the copyright. This has also been so held by the US Court of Appeals for the federal circuit in Robert Jacobson Vs Matthew Katzer on 13. 8 2008.

ADVANTAGES OF OSS

Here are its advantages; they were responsible for shifting over to OSS at the Allahabad High Court:

- (i) *No Copyright infringement in using or modifying it:* There is copyright in the OSS. In fact, OSS is copyrighted by using copyright. However in terms of the license conditions, there is no copyright infringement in merely using or modifying it. Copyright infringement due to unauthorised use is a global issue and adopting OSS will obviate this aspect of it.
- (ii) *Lesser cost:* OSS is royalty free; it does not cost anything. The cost is for services or support for the same. Utilising OSS will reduce the cost of any project. The cost reduction has an impact on the proprietary software too. In order to be competitive, their cost is being reduced.
- (iii) *Avoids IPR:* It is possible to have IPR in the modified software created from OSS but the authors of any OSS do not claim any IPR in the OSS in anyone using and modifying it (though there are some conditions). This is clear from the fact that they permit everyone to use/ modify/ distribute it without any royalty. This not only leads to reduction in the IT cost but avoids future conflicts in IPR area.
- (iv) *Stable:* Virus is nothing but a computer programme which effects any other computer programme or computer data. In OSS there can be viruses however there have been only a few viruses in OSS. This is because its source code is open/ published. Experts say that it is safe and provides stable environment. This is also strengthened by the fact that Apache (an OSS) web servers are the most popular ones.
- (v) *Service sector:* Due to historical reason, our English and Maths have always been a plus point. These subjects are necessary for providing services in the IT sector. Adoption of OSS may open new job opportunities in the service sector.
- (vi) *Save in Open formats in default and can save in proprietary format as well:* Formats are a particular way of encoding or a method of storing information so that a computer programme or a device may, understand, reproduce, and, if the need be, render it for modifications. One has to take a license to use proprietary formats. But open formats are

Documented and published; made available irrevocably to everyone without any royalty or fees and are maintained by a neutral body, where decisions are taken with consensus or majority thus catering to the needs of all. They can be implemented by anyone at any time that is not true of other formats. It is better to store information in open format: it is only then we can be sure of owning information.

Let me explain the advantages with the help of a story from 'Panchtantra': this has a common thread in all cultures. It is a story of a hare and a tortoise.

THE TORTOISE AND THE HARE

One day, the hare and the tortoise decided to race against each other. The hare obviously took the lead; he thought of relaxing and went off to sleep. The tortoise, walking slowly but steadily, overtook the hare and won the race. The moral is,

'Slow but steady wins the race'.

In recent time, some new chapters have been added.

The hare, perturbed by the defeat, asked the tortoise to race again. This time he did not take rest and won the race easily.

The moral is,

'It is better to be fast and reliable'.

But, this is not the end of the story.

After some days, the tortoise asked the hare to race once again but with a condition that the course will be chosen by him. The hare, who was confident of his victory, gave him the free hand. This time the course included a river. The hare



Screen shot from the film 'The Tortoise and the Hare'

ran up to the river and then stopped. The tortoise came and swam across the river to win the race. The moral is,

'Every one has weak and strong points – play on your strong side.'

However, the story still does not end here.

After some days, the tortoise and the hare repeated the race over the same course but the rules were changed. This time they decided run it as a team. On the

ground, the hare carried the tortoise on his back and on the river, the tortoise carried the hare on his back. The result was that both of them reached the destination quickly, saved time and enjoyed the race too. The moral is,

'It is best to consolidate everyone's strong points'.

STRATEGY – SHIFTING OVER

The biggest difficulty in adopting OSS is, in shifting over to OSS; getting used to the new environment; and training the staff. It cannot be done successfully without your patience and help.

Linux is an operating system like Windows but is open source. While shifting over to Linux, we will proceed with a strategy.

Most of OSS applications work in all operating system. We will first adopt the following applications in Windows. Their working in Linux is similar. Thereafter when you are conversant with them, we will shift over to Ubuntu, a version of Linux. This version of Linux is also recommended by E-committee (see Appendix-1.

- **Libre Office/ MS Office** : It provides bundle of software that are used in an office. It is similar to MS office suite and contains similar programmes. The default format of different programmes of this suite are open document format maintained by Organisation for the Advancement of Structured information Standards (OASIS). It was approved by the International Standardisation Organisation (ISO) on May 3, 2006. They can open and save files in default format of MS Office suite as well as in any other format too. It can export any file into pdf format also.
- **Impress/ Power Point**: Impress is included in Libre Office suite. It is equivalent to Power Point and helps you to make presentation. It can open a Power Point Presentation or save in ppt format
- **Firefox/ Internet Explorer**: Firefox is a web browser: Window equivalent to Internet Explorer.
- **Thunderbird/ Outlook Express**: It is a program for sending and receiving emails. It can perform functions of Outlook express.
- **Lightening plugin in Thunderbird/ Microsoft Outlook**: It is an e-manager and manages your calender. It reminds you of your friends' and relations' birthdays, marriage anniversaries, and other important tasks. It is

similar to Microsoft outlook and can be integrated with Thunderbird or Firefox. You will get it along with Thunderbird

- **Audacity:** It is programme for recording audio files. It permits editing of the audio files too. One can copy, paste, or mix the audio files.
- **VLC Media Player/ Window media player:** It is media player. It can play audio and video files of any format. It is similar to Window media player.
- **GIMP/ Photoshop:** It is GNU Image Manipulation Programme and is suitable for such tasks as photo retouching, image composition, and image authoring. It is similar to photoshop.
- **Infra Recorder/ Nero, Roxio:** It is programme for burning CDs and DVDs. It works in the windows only. However, K3B is a similar programme that works in Linux.

Some say that they are not as good as proprietary ones. I do not wish to debate about it but they are sufficient for our needs. They are not only open but are free of cost and can be used without any guilt of copyright violation.

Once you are used to them in Windows then there will be no difficulty in shifting over to Linux as their functioning is same in Linux

OPEN SOURCE, OPEN STANDARDS & FORMATS – GOOD MEANS

Open source software, open standards, and open formats,

- (i) Consolidate strong points;
- (ii) Invite others to participate in its development;
- (iii) Make us master of our information.

They are good means within Gandhi's philosophy and are road to the future. They will provide us with wings—with them not only the penguins but we shall also soar high.

Endnote-1: All pictures except third and fifth one are from Wikipedia.

Appendix-1

1. E-committee has recommended Ubuntu to be installed in the laptops/ computers. It may have the following programmes and be configured as follows:
 - (i) Firefox web browser;
 - (ii) Thunder bird (for email) with lightening (calender);
 - (iii) Libre Office;
 - (iv) VLC media player with MP3 plugin;
 - (v) Audacity (audio editor software) with MP3 plugin;
 - (vi) GIMP (Photo editing software);
 - (vii) Adobe.

2. Firefox web browser may be configured as follows:
 - (i) Home page may open two websites -
 - (a) The home page of that court and in our case Chhattisgarh High Court.
 - (b) Google reader with RSS feed of the administrative and AFR decisions of the Chhattisgarh;
 - (ii) The links already provided should be provided as Bookmarks in the browser.

3. Icons for all programmes that are installed should be provided on the desktop.

5. The re-installation and recovery CD may be made accordingly.

6. The details of the default template are as follows:
 - (i) The template should be such that the header is turned Off for the first page only. The header should be On for rest of pages displaying page number (Page number is not available in the first page);
 - (ii) The default page size is set to Legal;
 - (iii) The margin measurements is in centimetres;
 - (iv) The margin size is set to Left=4cm, Right=2cm Top=3.5cm and Bottom=5cm
 - (v) The default path for saving documents is set to point at My Documents in user home folder;
 - (vi) User Interface language, Locale Setting language and Western Language is set to English(India or UK) by default. Locale Setting language and Western language can also be set to English (India) as dictionaries are available in latest versions of Libreoffice suites;

- (vii) Complex Text Layout (CTL) should be enabled and CTL Language should be set as Hindi by default;
- (viii) The Basic Font (Western) is set as Arial and Basic Font (CTL) is set to Lohit Hindi;
- (ix) By default all paragraphs are justified;
- (x) The Page Size is set to Legal in Printer Settings.