moss.org.mv

MOSS

MALDIVES OPEN SOURCE SOCIETY

YOUR MONTHLY FLOSS MAGAZINE | JULY 2010

ramazan engine-2.01x.22.hack [July 17 2010, 12:26:24] /FPS 41.46 (1: 58.82)(m: 63) (a: 8)

next level

root@localhost:> crack station-11.corporate.com.mv

[bouncing link through 0 host(s)]

cracking: station-11.corporate.com[xxx.xxx.xxx]

launching.

You can type ABORT anytime to abort

root@localhost:> connect station-11.corporate.com.mv

[bouncing link through 0 host(s)]

connecting to: station-11.corporate.com[xx]

connected.

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THE POWER OF MOSS

Certain moments are worth mentioning and this is one of those moments; Maldives Open Source Society (MOSS) is celebrating one year of it's "official" birth. This is the moment to announce our achievements, we have a monthly magazine running, we had couple of events and we have got many new valuable members.

Feeling as good, as we feel about MOSS right now, usually is associated with illegal activities. Maybe this is rare, but yes this is real... While we are enjoying our moments at MOSS with a smirk, this is time to keep in mind that we can accomplish much more if we jot down all these inevitable inspirations we all are receiving...

Such interests as in Information Technology (IT) are rumored as people who don't appreciate anyone invading that 'personal space' all therapists talk about. Sometimes we have had our differences in opinions but we have managed to sweat the small stuff and prove that we are a social bunch, with respect, unconditional help to one another and have no need to use pepper spray or tear gas. Above all we are moving forward with any odds and evens.

This is the time to focus on the most seemingly inconsequential issues that can wreak a major havoc on our projects. Our total focus and attention set at everything lining up correctly.

Looking at the way things are lining up, new projects and plans are quite auspicious, so we need to make sure that we are following up on our big ideas. If we find any snag in our plans, that just means that we need a little extra challenges to feel alive!

We all can work some serious magic on our team-building and projects if we invest as much of our mojo as possible on MOSS. So if you are sincere and honest about the cause, which we are, we can do just about anything. That is the power of MOSS.

Editor

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http://moss.org.mv

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MOSS:
Your Monthly FLOSS Magazine

EDITORs

COVER July 2010, ISSUE #07

DESIGN TEAM

ADDICTIONS LIKE SEX & DRUGS ARE ONLY FOR THOSE WHO HAVE NO SENSE OF PURPOSE IN LIFE...

Readers' opinions regarding our magazine and/or articles.

MOSS is all about Software Freedom. If you think you could be part of MOSS or you know someone who could, please let us know, we want our magazine to be interactive. We want to progress with you. The common use of free software is not as far off as you think, so let's open our minds to the world and the future.

Let's make it happen!

If you have any good ideas or constructive opinions regarding MOSS magazine's contents, this is the place to express yourself.

Please email us at magazine@moss.org.mv

Beginner

Linux Gaming

Jaa | krypticshuja@gmail.com

Many users complains that the Linux Operating System does not have any decent games, however I completely disagree to that since there are many high quality games which are available to play. Here the main drawback is that many gaming firms do not develop games which are compatible to the Linux platform since they are not able to sell these games in Linux environment. Even though the Linux Community have produced many high quality games. Here in this article I will be taking a look at the most famous games which are available for Linux. I will be using Ubuntu as the distro of choice and these games can be installed via the software center in Ubuntu. If you are using another distribution, then these games can be installed via your package manager.

America's Army

America's Army is a tactical, multiplayer, first-person shooter owned by the United States Government and released as a global public relations initiative to help with U.S. Army recruitment. The first version, Recon, was released on 4th July 2002. The current version 2.8.1 was released on 22nd Mar 2007.

It's the first well known computer game used for political aims. The game is used as a playable recruiting tool and critics have charged the game serves as a propaganda device. A counter on the homepage of the PC version shows over eight million registered accounts as of 2007. Game Spy tracked the game usage and reported an average of 4,500 players at any one time between 2002 and 2005. It is enough for America's Army to rank in the Top 10 Online Games chart.

Enemy Territory : Quake Wars

Is a first-person shooter follow-up to Wolfenstein: Enemy Territory. It also has the same science fiction universe as Quake 4, with a story serving as a prequel to Quake II. Quake Wars is the second multiplayer-only game in the Quake series after Quake III Arena. The gameplay is almost the same as Wolfenstein: Enemy Territory, but with the addition of controllable vehicles and aircraft, asymmetric teams, much larger maps and the option of computer-controlled bots. Enemy Territory: Quake Wars is being developed by Splash Damage for the PC using a modified version of id Software's Doom 3 engine and MegaTexture rendering technology.

At E3 2006 (Electronic Entertainment Expo), the game won the Game Critics Award for Best Online Multiplayer. Its Linux version is in development and are available for beta testing on demand.

Battle For Wesnoth

David White who started Wesnoth back in 2003, had a vision of a free open source strategy game that had very simple rules, uses a strong artificial intelligence, challenging and fun. Wesnoth has already passed the 1 million mark for downloads. As of March 2007, the game is available in 35 different languages.

A normal Wesnoth player has
200+ unit types
16 different races
6 major factions
to choose from.

Actually, you can even make your own custom units, design your own map, scenarios or even campaigns. It's all up to your creativity. The most interesting part of any game is the ability to multiplay. You can challenge up to a total of 8 friends in multiplayer fantasy battles. If you are a fan of Warcraft series this is a game for you.

Tremulous

Tremulous is an open source team-based first-person shooter with a game play that is similar to Gloom(a quake 2 mod) and Natural Selection (a Half-Life mod). The game features two teams, humans and aliens, each with their own strengths and weaknesses. The game has been downloaded over 200,000 times and was voted "Player's Choice Standalone Game of the Year" in Mod Database's "Mod of the Year" 2006 competition. Sadly this year April they are developing the game for xbox 360 which would be a closed code version of the game.

Tux Racer

Tux Racer is a newbie friendly, open source, 3D computer game starring the Linux mascot, Tux the penguin. Like many open-source games, the replay value of Tux Racer is extended by easy modification of the game. New maps can be created by making three raster images to indicate height, surface, and object placement.

World Of Padman

WOP is a free comic style game that uses the Quake 3 engine. Origin of this game is a mod for quake 3 titled padmod.The game was recently featured in 3 German magazine covers; PC Action, 'BRAVO Screenfun' and 'Linux Intern'. The current version runs on an enhanced version of the ioquake3 engine, which is based on the Quake III Arena engine.

Vendetta

This is a first person twitch based MMORPG. New players get an 8 hour trial which is enough to get anyone hooked to it. After that, you gotta pay $5 a month which is quite worthwhile, especially considering the incredibly communicative development of the game...

Nexuiz

Nexuiz is a free, cross platform, first person shooter distributed under GNU General Public License by Alientrap Software. It started back in May 31 2005 with version 1.0 using Dark Places, a significantly modified quake engine. Nexuiz's logo is based on an Chinese which means strength.

Several notable features of the game include
ability to multiplay up to 64 players
ability to generate bots for practice sessions
dynamic lighting system similar to Doom 3

Urban Terror

A mod of Quake III Arena, Urban Terror focuses a lot on realism. Number of weapons and gear that can be carried is limited. Accuracy is reduced when fired while moving and magazines require reloading upon expension. Damage areas are identified throughout the body. Wounds require bandaging and slows down movement significantly if the damage is not bandaged. Even a stamina bar is present to indicate if the player is able to sprint or jump. Released on 1st April 2007, Urban Terror 4 introduced 4 new features namely, 'powersliding', new weapons, player models and improved hit detection. It also supports anti cheating tools like PunkBuster, BattleEye and RunDMC.

Second Life

Second Life is an online virtual world that allows 'Residents' to explore, meet each other, socialize, participate in group activities, trade items and services. It's creators, Linden Lab, intends to create a world like the Metaverse described by Neal Stephenson in his novel, Snow Crash. In this Metaverse, people can interact, have fun and do business. The current currency is Linden Dollar (L$) and is EXCHANGEABLE for US$ in a marketplace consisting of residents, Linden Lab and real life companies. It is hardly considered a game as tt does not have points, scores, winners or losers, levels or an end-strategy. More than 7 million accounts have been registered since its conception. Basic accounts is free but Premium account is US$9.95 if you want to own lands.
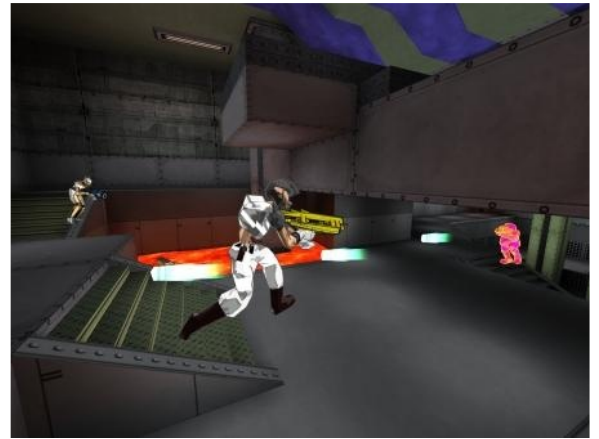
Savage 2

This fantasy / science fiction, real-time strategy, fps, rpg game is a sequel to to S2 Games' Savage : Battle for Newerth. Both teams of human and beasts are pitted against each other in a gameplay where strategy, agility and alertness is needed. The game is downloadable for free but online access requires a one time account purchase of US$29.99. Activities such as kills, deaths, assists, building razes, damage and score points are tracked. All Savage 2 matches are saved and thus searchable in the form of replays. The automatic replay network is a system that will greatly increase the skill levels of overall player populations and competitiveness.

Warsow

Warsow is a free FPS based in Qfusion 3D engine playable on Windows and Linux developed under the motto 'by gamers for gamers'. Beta testers from the community goes through internal testing sessions and gives feedback on public releases where the main developers will carefully judge suggestions and comments made. Gameplay is focused a lot on agility. Weapons picked up will have weak ammo until a new ammo pack is found. Graphic effects are minimal, clear and visible.

TrueCombat: Elite

TC:Elite happens to be a total-conversion modification of Wolfenstein: Enemy Territory by Team Terminator and Groove Six Studios. The game is free and playable across all platforms. Notable features include iron sights aiming (no crosshair), multi layer object penetration, letterbox / wide screen view modes, lag compensation, client side bullet prediction and support for PunkBuster, the anti cheat software.

Alien Arena

Alien Arena is a fast paced, furious frag fest with arenas ranging from the small, to the massive. With a large built-in player base, it's never hard to find a good match going on, at any hour of the day. The community is friendly, as well as prolific. Dozens of maps, models, and various accessories have been created by community members to add on to the game experience. The CRX engine that powers Alien Arena has received very signifigant upgrades in recent releases, resulting not only in stunning new visuals, but vastly increased performance as well.

The Open Racing Car Simulator

TORCS is an open source 3D racing simulator using OpenGL technologies. It is runnable on all Linux, FreeBSD, MacOSX and Windows platforms. There are 50 different cars, 20 tracks and 50 opponents to race against. The multiplayer mode can accommodate up to 4 human players. Several of the simulation include damaged models, collisions and aerodynamics like ground effects, spoilers, etc. Development is currently being carried out to enable online racing mode.

FlightGear

Since 1996, FlightGear has been a collaborative project that aims to create a sophisticated open source flight simulator framework. FlightGear uses the SimGear simulation engine. Some of the aircraft models available in FlightGear include gliders, helicopters, airliners, fighter jets, etc. Weather effects such as clouds, lightning effects and time of the day is illustrated.

Frets On Fire

Winner of the Assembly Demo Party 2006, Frets on Fire is a music video game that uses the keyboard to play along with scrolling on-screen musical notes to complete a song. The player has to imagine the keyboard as a guitar and pick it up to play. One hand will be used to press the 'frets' (F1 to F5) and another will be used to press the 'picks' (Shift or Enter). Colored markers that appears are to be played by pressing 'frets' of the correct color and 'picks' at the correct moment. There are also song editors and tutorials featured in the game. This game was addictive once you get the hang of it.

Scorched 3d

Scorched 3D is a 100% free turn-based artillery game modeled after the classic DOS game Scorched Earth 'The Mother Of All Games'. Operatable across all operating systems. What started as a 3D landscape generator has now become a cool 3D game that requires skills to master. Players are supposed to take turns homing in to hit the target by adjusting the angle, rotation, power and a weapon of choice every other turn. Hits and kills will generate income for you to buy better weapons and items. Note that items are as important as weapons.

ManiaDrive

ManiaDrive is a free clone of Trackmania and is an arcade car game on acrobatic tracks, with a quick and nervous gameplay (tracks almost never exceed one minute), and features a network mode, as the original. Lots of crazy driving involved.

Warzone 2100

Warzone 2100 is a real-time strategy and real-time tactics hybrid computer game, developed by Pumpkin Studios and published by Eidos Interactive. Outside of the story, Warzone 2100 only has a single faction, limiting some of the variety that can be expected from such games of its kind, although the faction is very complex. Essentially, Warzone 2100 plays much like Earth 2150 with 3D units and terrain, customizable vehicles, a lack of traditional standing infantry, use of "research" to acquire new technologies, and perceptible differentiation of vehicles types.

Battle Tanks

Battle Tank is a multiplayer game in the first place. Network game and split screen mode are available, and also a mixed mode is possible, when two players use split screen on the server computer, and others connect via LAN. Two possible modes are deathmatch battle and cooperative game. Hardware requirement is minimum and the game is cross platform.

Excalibur: Morgana's Revenge v3.

EMR 3.0 is a unique scenario based upon the Aleph One (Marathon) engine. It is a first-person action adventure game, featuring an epic and in-depth story line. It brings more exciting new maps, new high resolution textures and landscapes, a completely new set of weapons, new monsters and friends, new scenery, new 16-bit sounds, original music, and a carefully woven original story line that transcends time.

Rubicon x

Rubicon X is a free, cross platform, first person shooter that continues the story of Bungie's Marathon trilogy. First released as Marathon:Rubicon in 2001, Rubicon X is a complete overhaul of the original. It features all new high-resolution artwork, new and updated maps, and enough surprises to feel like a whole new game.
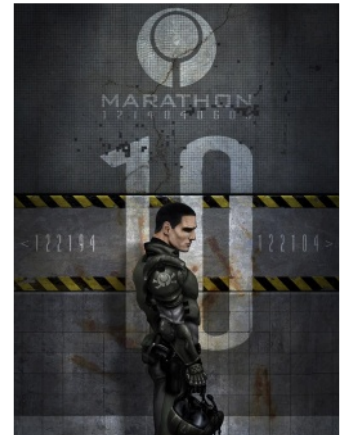
Game reviews and details are not necessarily that of mine and are mostly taken from the respective websites.

Install packages in Ubuntu using an Archive Folder or with an APTonCD

Soul (Shiya) |soul@souley.org

There are several ways to install software in Ubuntu, one way is downloading and installing software via the software center or by using synaptic package management system which is built into the Ubuntu desktop. Another way is to download and install packages from various websites which offer a Debian file. Many websites even offer the source code of the application, in which the user need to compile them in order to install them on their machine.

When a user installs Ubuntu and some packages, all the downloaded packages are stored in a folder. This folder is called archive or cache. Users can use the packages in this folder to install the same packages on another system or to update another system so that the user doesn't have to download the packages again.

These packages are located in the folder "/var/cache/apt/archives/". To gain access to this folder you need root privileges. To give root privileges to Nautilus file manager, open up a terminal from Applications>Accessories>Terminal and type in the following command.

```
sudo nautilus
```

This will give nautilus root privileges. Then browse to the root folder. Browse your self to var/cache/apt/archives. Copy the folder named archive to a pen drive or any other storage device.

To install the same packages on another computer copy the archived folder to the desktop and open up a terminal. By using the terminal navigate to the Desktop folder in Ubuntu, to do this type in the following command.

```
cd ~/Desktop/archives
```

To install the packages type in the following command

```
sudo dpkg -i *
```

This will install all the packages in the archives folder to the computer.

So you got yourself a new computer. Got the latest version of Ubuntu and installing it was a smooth sail. But, the problem arises when you want your current computer to have the exact packages and dependencies as the current system. To download all of that packages and updates using your 512kb unlimited connection to bring the system up to your satisfaction is going to take forever. For cases like these and similar, AptonCD is your best friend.

So what is AptonCD? To put it simply, AptonCD is a small software which allows one to create a CD image (ISO) of all the packages downloaded via apt-get or even the packages in a given repository. Image the time it would be saved if you create an AptonCD from your current systems repository and packages and installing them to your new computer with the same updates.
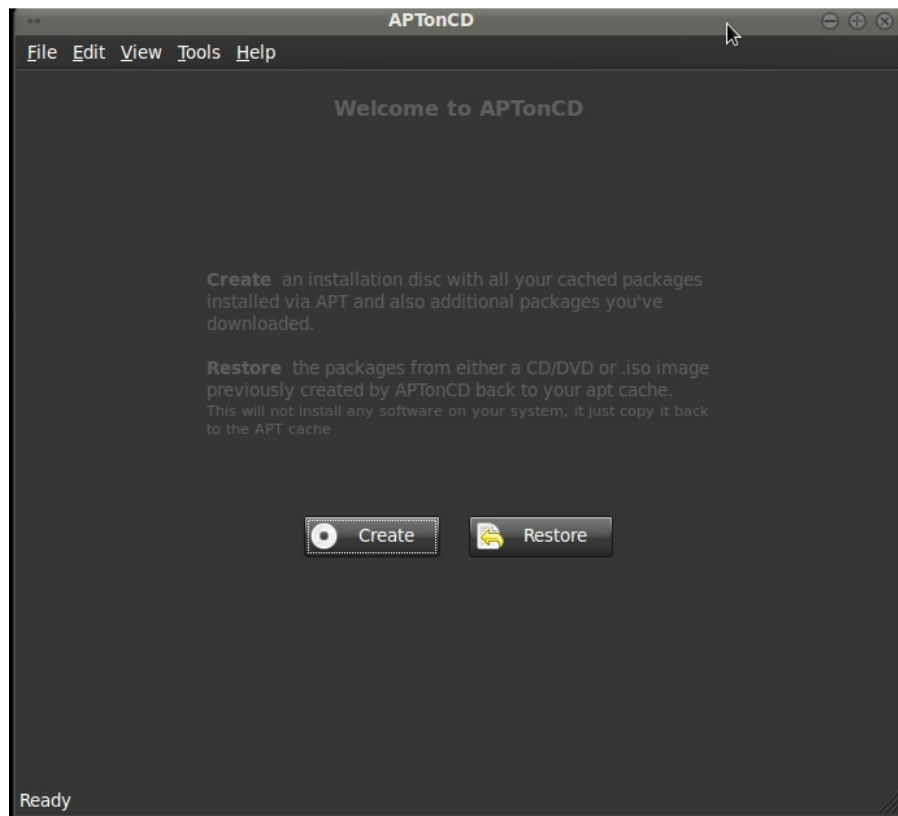
How to use AptonCD? You may download it from **http://aptoncd.sourceforge.net/** or use the package manger to install it. For Debian derived distro (Ubuntu, Linux Mint, Debian) users, simply "sudo apt-get install aptoncd" in a terminal would be enough to get this downloaded, installed and ready to work. Once it is installed, you will find a Gnome menu entry at the location System -> Administration -> AptonCD. You got two options first,

Clicking on it opens a GUI which will aid in the creation of an ISO image of all the packages stored in the /var/cache/apt/archives directory and any other files which are needed. It is simple really, the GUI has two tabs namely Create and Restore. The Create tab has a single button which when clicked copies all the necessary packages from the /var/cache/ directory and displays it in a pop up dialog. Here you get to decide if you need to add any additional packages stored in an alternate location or remove some of the already selected packages. There is also an option to set the target media as a CD or DVD and the location where you want to save the resulting image.
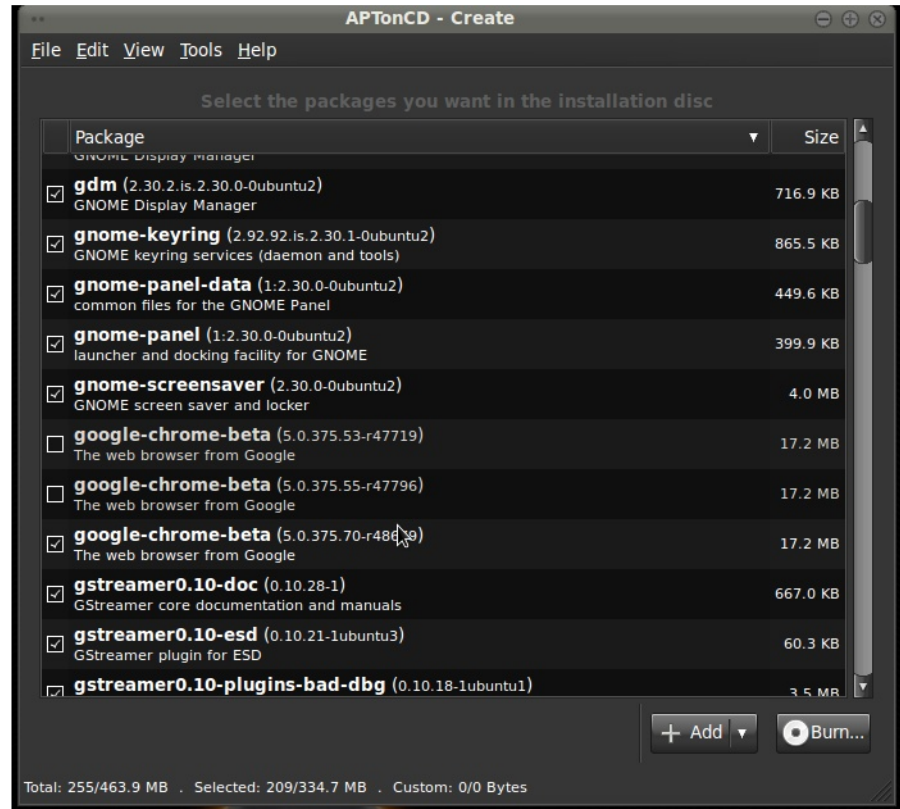
Once the choices are made, the program creates the necessary CD/DVD image and saves it in the location you had chosen. Now you can either store it in a different location or burn it to a CD/DVD.

Restoring to the new computer
Open AptonCD
The Restore tab of the AptonCD GUI contain three buttons each catering to a specific purpose. This tab allows you to:

- Restore all packages available from an AptonCD media (read it as CD or DVD) on to the computer.
- Restore packages from an AptonCD ISO image previously generated and stored locally.

Add a CD/DVD created as a repository for apt-get, aptitude or synaptic. Which means the program adds the necessary lines of code required in the **/etc/apt/sources.list** file which will enable you to use apt-get or any similar program to install the software on the CD.

We all found this program very useful in our projects especially when preparing machines to our events and when we have limited time on our hands. Hope this program will find its way into your life at some point and make use of it to the fullest extend.

Credits
ubuntuforum.com
ubuntugeek.com
Linuxhelp.blogspot.com

Use open-source and be free

Mohamed Malik
mohamedmalik.com

"Microsoft and its suppliers provide the Software and support services (if any) AS IS AND WITH ALL FAULTS, and hereby disclaim all other warranties and conditions, whether express, implied or statutory, including, but not limited to, any (if any) implied warranties, duties or conditions of merchantability, of fitness for a particular purpose, of reliability or availability, of accuracy or completeness of responses, of results, of workmanlike effort, of lack of viruses, and of lack of negligence, all with regard to the Software, and the provision of or failure to provide support or other services, information, software, and related content through the Software or otherwise arising out of the use of the Software"

Written above is the Microsoft end-user license agreement. Its only a question that how many of the users here in the Maldives read the license agreement before they start to use it. Many people who has been using windows for a long time has no idea or clue what is in the license agreement.

The end-user license agreement might not be of such importance or impact when there is no copyright law in the Maldives, but when a copyright law is implemented in the Maldives it will impact anyone who is using computers, individuals, businesses and companies and even the entire government.

Let us take a look at the first point in the license agreement. "AS IS AND WITH ALL FAULTS". This is stupid, since the current version of window cost MVR3,000 and if it comes with all its faults and they are not responsible for any faults which are being issued or created by Windows. Free and open-source software also comes with all faults but when paid software comes with all faults it is something that we need to worry and think again. Take this for an example: a customer buys a an apple and it causes food poisoning which means that the apple has something wrong with it. Then again as an impact of this the customer needs to spend a lot of money for treatment. When paid software comes with all faults and causes a loss for the customer and when the vendor is not responsible it shows how evil the vendor is. So at this instance the free and open-source software has the upper hand. Which also means that in case of data loss or any incident Microsoft will not be responsible and there is nothing that the user can do about it. Let me tell you my personal experience with Microsoft. In February 2008, I bought an Acer Travelmate 6292

which came per-installed with a copy of Windows Vista Business. The laptop didn't come with drivers or a Windows CD, it came installed with a genuine version of Vista and all the drivers, it contained all the data in a recovery drive. As soon as I started using it I was asked to create a backup DVD, which I created. However after two months, I had to revert back to the original settings due a virus infection. Unfortunately the backup DVD which I had created had errors. And due to the virus the recovery partition inside the hard drive was also infected and it didn't function. I emailed Microsoft support and service center regarding this issue and they said that they are not responsible for such issues. It is no surprise that the answer had to be like that since it stated in th EULA that it comes with all faults. So I wonder what is the use of genuine windows if this is the case with it. Why should we even need to pay these morons if they are not responsible for there own faults and actions.

Looking ahead at the "disclaim", it disclaims anything that happens to the user by using the software whether it is good or bad. Is this a valid reason for paying the Redmond giant MVR3,000 and buying there software when they disclaim all of it use. The license agreement also states that, "of fitness for a particular purpose, of reliability or availability, of accuracy or completeness of responses". Which basically means that it is not fit for any purpose. Let us say that a student buys Microsoft's office in order to do

his daily and school work at home. For the student the purpose of buying Office it to do his assignments, type letters and for all his academic needs. He pays his hard earned cash for this product. But Microsoft says that it is not fit for any purpose. It comes to my mind that why on Earth they called it Office! An Office software or a productivity suite mean it should be designed for a reason and a purpose and it should be fit for that particular purpose. If it is not fit for that purpose then please don't release it just for the money. In this regard the open-source community is at an advantage since they also do not guaranty its fitness for a particular purpose, its free and it has all the features that a typical user is looking for in Microsoft Office. Yes, I'm talking about OpenOffice.org the free productivity suite that fears Steve Balmer and his staff.

"provision of or failure to provide support or other services, information, software, and related content". This is also a point in the EULA which bothered me a lot. Which basically means that for any inconvenience for anything Microsoft doesn't have to provide users with support. Let's take this as an example. Malik is someone who does Thaana typing a lot, he encounters a bug in the OS which prevents him from typing Thaana .He send a complain and a bug report, which means that they doesn't need to fix that bug, since they do not provide support at the request of the user. According to Microsoft updating and

bug fixing rules and regulations, he has to wait until the hot fix arrives. Which could be a month or perhaps an year. Here in this discipline the open-source community offers more flexibility and support. If any problem occurs just send in the the bug report and the developers are awaiting. It only takes them a few days to attend the problem and get it fix. On the other hand can get it fixed by a friend or himself.

When using non-free or software user are at the following disadvantages.

X Cannot share

X Cannot build upon

X Cannot learn how it works

X Only right to use

X Only choice is to buy again and again or find alternatives.

But people who are using open-source software are at an advantage.

- Free as in Freedom
- Can build upon
- Can lean how it works
- Can be used by anyone for any
  reason at any time
- Unlimited copies
- Anybody can access the source,
  serve own needs and give back to
  the community
- Use open standards

By looking at the above points we can see the beauty of open-source software. So why are we wasting our time and money to buy software, high quality alternatives are available for free. There is a quotation which says "the best things in life are free". Open-source software definitely one of them.
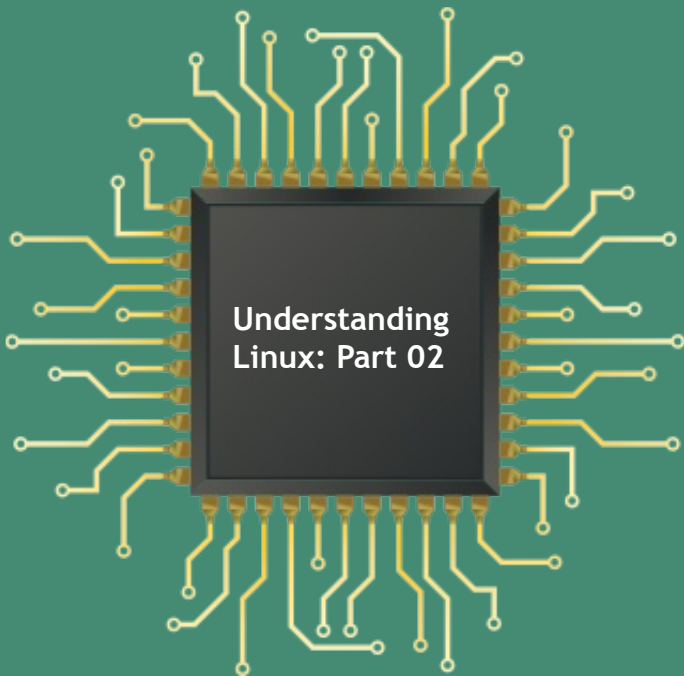
Free as in Freedom

Can build upon

Can lean how it works

Can be used by anyone for any reason at any time

Unlimited copies

## Anybody can access the source, serve own needs and give back to the community

Use open standards

Understanding Linux: Part 02

Advanced

Linux File System Explored!

Yusuf Abdulla Shunan | shunan@gmail.com

As discussed in the June Issue of MOSS Magazine: Shell, Kernel, system calls, commands, all these are programs with codes stored in files on a Linux system, so as a continuation of it let us take a closer look at the file system now. In the Linux file and directory system, every file is assigned to a directory. A directory is a specialized form of file that maintain a list of all files in it. What makes this organizational scheme powerful is that a file in a directory can be a directory itself; it would be called a subdirectory of the original. This capability makes it possible to develop a tree like structure of directories and files. You can visualize the directories as being the various limbs and branches of a tree, with the file as the leaves attached to them. Each user has a home directory and is free to create her own subdirectories within subdirectories, and so on. The root directory, which is named /, is the prime or starting directory. All other directories are subdirectories of root. In the Linux tradition, / is often portrayed as the trunk of a tree, so much for biological verisimilitude.
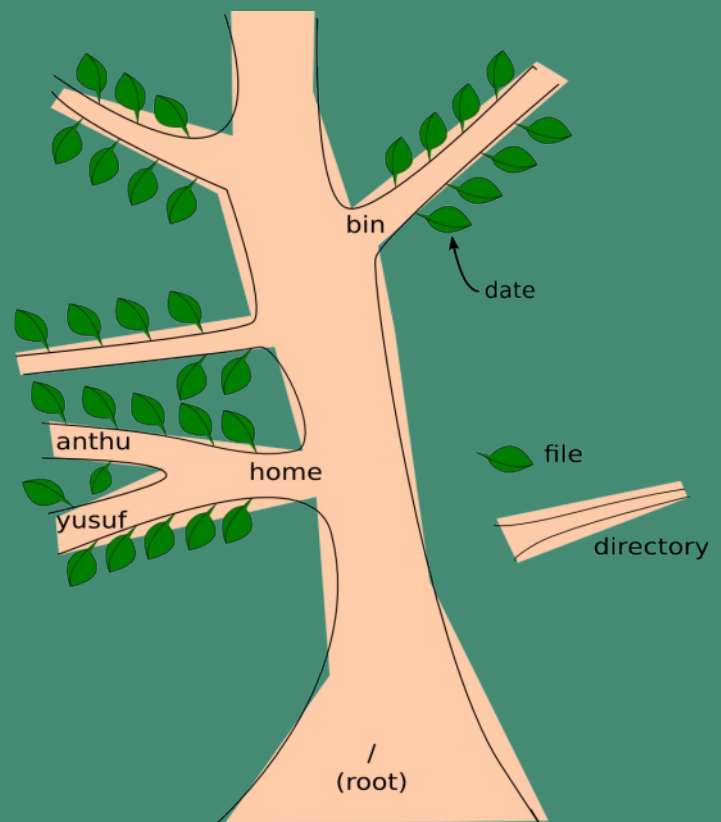
More information on the standard directories of Linux can be found in, MOSS Magazine Issue 01, the article by cosmicflu titles "Linux File System Standards".

This tree scheme of Linux File System makes it easy to organize files. You can create one subdirectory for C programs, one for your documents, one for your image, etc. These you can further subdivide if necessary. The Linux cd command lets you change from one directory to another. For example, in the terminal the command

```
cd /
```


places you in the root directory /, which then becomes your current working directory. Another Linux command, pwd, prints out the name of your current working directory in case you forget where you are.

However, the tree scheme does pose a difficulty in identifying files. How do you distinguish, say, between a file call img03 in your directory and one by the same in another directory? First, if you just give a simple filename, the shell assumes that you mean a file in your current working directory. But you always have the choice of giving the full pathname of the file. This means to precede the name of the file with a list of all the directories leading to it. For example, consider the file img03 below.

The full pathname for the file is /home/yusuf/imgs/img03. Here, the first slash (/) stands for root, the great trunk of the whole directory system. (All pathnames lead from root). The other slashes serve to separate each directory name from the next, so the pathname leads us from the root directory to the home directory to the yusuf directory to the imgs directory and finally to the img03 file.

The tree image provides a helpful way to visualize the file and directory system, but it doesn't reveal what actually goes on when you create a file. Let us look at the inside story.

pathname = /home/yusuf/imgs/img03
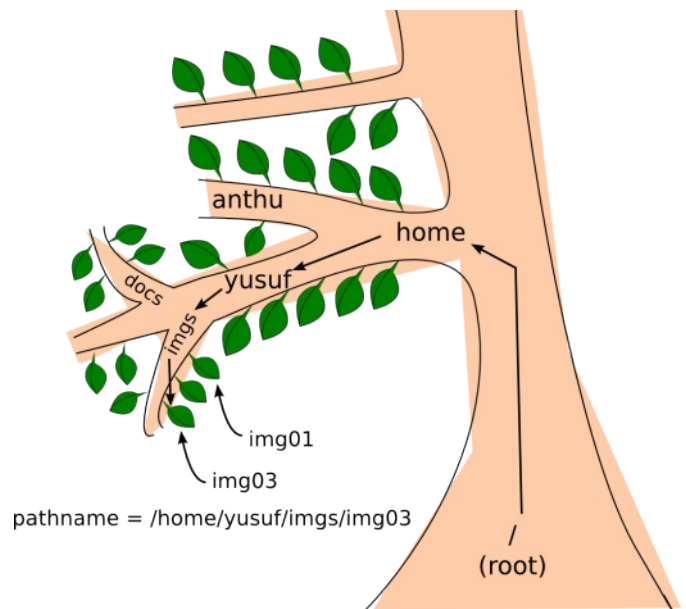
File Creation

Suppose you use an editor to create a file call nubalaathi containing some secret text.

```
nubalaashey buneemaavesh beley dhoo?
```


Several things happen when you create this file in Linux. First, the Kernel allocate space in the computer's storage to hold the file. There the text is stored one character per byte of memory (A byte is a unit of memory size. It is a convenient size for storing the code to represent a single letter, digit, or other character). The file holds these characters (including special characters to represent the space and the starting of new lines) and nothing more. The file contains nothing special to mark its beginning or its end or to indicate its name.

This makes for a very simple file structure, but something more is needed to keep track of the files and its properties. That's where the second and third point come in.

Second, an inode entry is created on a section of the disk set aside for that purpose. The inode contains nearly all there is to know about the file. This information includes the location on the disk where the file starts, the size of the file, when the file was last used, when the file was last changed, what the various read, write, and execute "permissions" are (that is, permissions detailing who can make what use of the file), who owns the file, and other administrative information. (The inode is where the ls -l command gets all the information it prints out about files). One particular important item there is the inode number. Each file has its own unique inode number, and it is by this number that the system refers to the file. The only things missing from the inode are the contents of the file and its name.
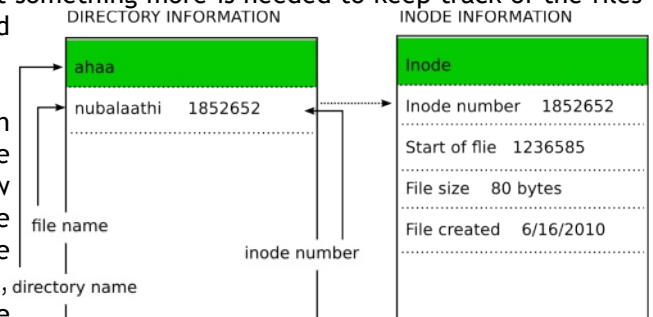
Third, a directory entry is created. A directory is just a file itself, and each directory entry consists of just two items: the inode number of a file and the user-selected name of that file. When you type something like
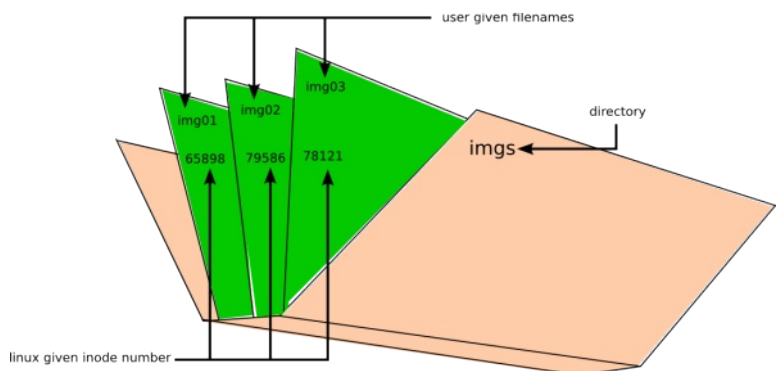
```
cat  nubalaathi
```

This will display the contents of nubalaathi file on the screen, the system uses the directory entry to find what inode number corresponds to nubalaathi. Then the system uses that inode number to locate the file.

In short, in this idealized view of Linux file system, the contents of a file are stored in one place, most of the relevant information in a second location, and the name in a third. (The reality often is more complex, with a file scattered over several locations, but since the operating system is willing to attend to the grungy details, we'll stick to the idealized simple view).
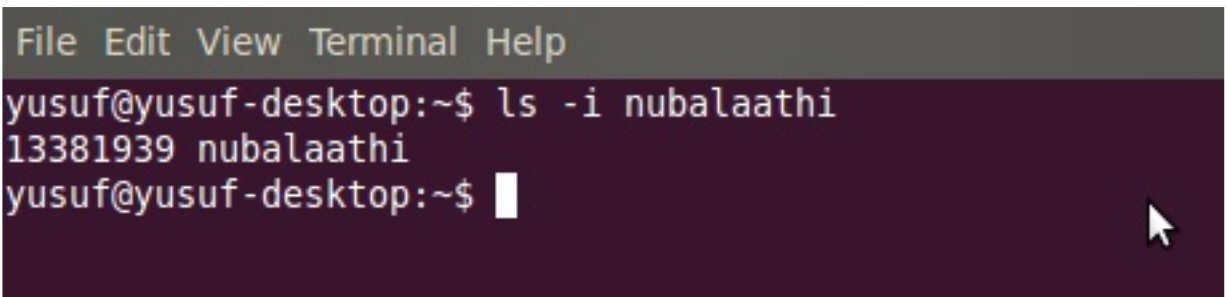
Let's see how this system works, suppose you give the command

```
cat nubalaathi
```

The Kernel collects this command and passes it to the shell. The shell then starts a cat command process. This process cause the Kernel to check the directory to find the inode number for the nubalaathi file. Next, checking the appropriate inode, the Kernel locates the starting point of the file, and the Kernel's input/output functions begin transmitting the contents of nubalaathi to your terminal. This continues until the number of characters given by the inode's size description has been transmitted. (Linux use the size of the file to figure out where it ends). The cat process terminates, and the shell uses the Kernel to send the prompt back to the terminal.
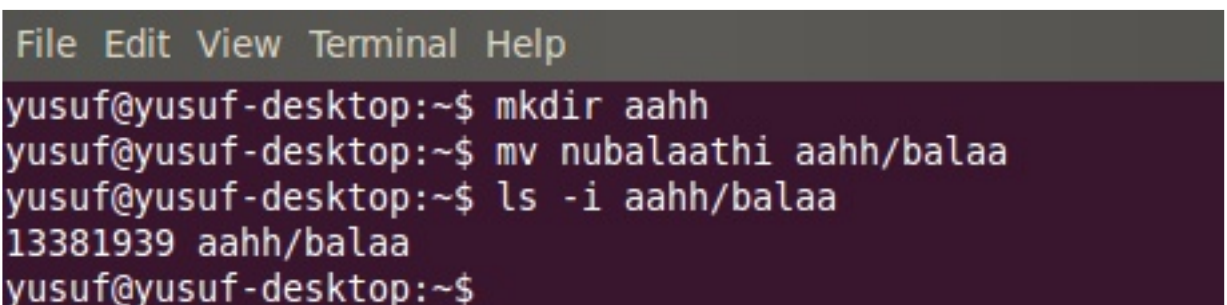
Why do you need to know about the inodes? If you are just going to use the standard Linux commands and not create your own programs, you don't need to know about inodes. The system uses the inodes as it processes your demands, and you never need to know about them. But if you write C programs that create and manipulate files, then you may use system calls that deal directly with inodes. At that point, an understanding of inodes is pretty useful. But even if you never need to deal with inodes, knowing about them will give you the satisfaction of understanding the Linux system better.

Inode Number and Filenames

```
File  Edit  View  Terminal  Help

yusuf@yusuf-desktop:~$ ls -i nubalaathi
13381939 nubalaathi
yusuf@yusuf-desktop:~$ █
```

Let's look more closely at the relationship between inode number and filenames. If you are curious about the inode numbers of your files, you can use the -i option of ls to display them:

```
File  Edit  View  Terminal  Help

yusuf@yusuf-desktop:~$ mkdir aahh
yusuf@yusuf-desktop:~$ mv nubalaathi aahh/balaa
yusuf@yusuf-desktop:~$ ls -i aahh/balaa
13381939 aahh/balaa
yusuf@yusuf-desktop:~$
```

Here the name of the file is proceeded by the inode number. Changing a file or moving it does not change the inode number.

Here we have created a new directory and moved our file to it changing the filename. As you can see, the inode number is unchanged. However, the original directory will have a new directory entry describing the new aahh directory, giving its name and its inode number. And the aahh directory will have an entry giving the name and inode number for the balaa file. (An exception occurs if the file is moved to a different file system. A new file system represent a different hardware storage area. In that case a new file and new inode number is given).
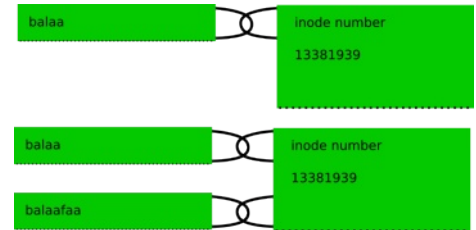
We can think of the filename as providing the user with a link to the true name of the file – the inode number. Indeed that is all the ln (link) command does:

Here no new file has been created, and no new inode number has been created; balaa and balaafaa have the same inode number. However, the inode contains one particular entry that lists the number of links, so that particular entry is increased by one. The only other change is that the balaa directory now links the name balaafaa with the inode number 13381939. Thus the ln command allows several different names to indicate the same file and the same inode. If you wish to read or modify the file, you can use any of the names linked to it.
Similarly, the command

```
rm balaafaa
```

serves only to remove the name-number linkage from the directory and to decrease the inode link-count by one. Only when all name links to a file are removed is the storage space freed up and the inode entry removed.

Inside a Linux file

The file itself, as we have said, is just a series of bytes. Let's examine this idea further. What is in a file? Text perhaps, or binary data, or even machine language instructions might be found in a file. Does this mean, then, that a text file is completely different from, say, a binary data file? No, on a Linux system; all files consist of a stream of bytes. When we say that Linux files consists of a

stream of bytes, this means that even if the file consists of, say, 32-bit instructions, the file still can be read 1 byte (8 bits) at a time, breaking the instruction into 4 parts. However, it doesn't have to be read that way. The difference lies not in the file's format, but in the way a program interprets it. A brief discussion of how computers store information will make this clear.

Dec	Hx	Oct	Char		Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL	(null)	32	20	040	 	Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH	(start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX	(start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX	(end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT	(end of transmission)	36	24	044	$	$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ	(enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK	(acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL	(bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS	(backspace)	40	28	050	(	(	72	48	110	H	H	104	68	150	h	h
9	9	011	TAB	(horizontal tab)	41	29	051	)	)	73	49	111	I	I	105	69	151	i	i
10	A	012	LF	(NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT	(vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF	(NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR	(carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO	(shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI	(shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE	(data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1	(device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2	(device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3	(device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4	(device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK	(negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN	(synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB	(end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN	(cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM	(end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB	(substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC	(escape)	59	3B	073	;	;	91	5B	133	[	[	123	7B	173	{	{
28	1C	034	FS	(file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174	|		
29	1D	035	GS	(group separator)	61	3D	075	=	=	93	5D	135	]	]	125	7D	175	}	}
30	1E	036	RS	(record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US	(unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177	&#127;	DEL

Source: www.LookupTables.com

Bits, Bytes and Words

The fundamental unit of storage in a computer is called a bit. We can think of a bit as being able to store just one item, and that item can be either a 0 or a 1. Another basic storage unit is the byte, which on nearly all systems consists of 8 bits. Thus a byte can store some combination of eight 0s or 1s; for example a byte could hold the combination 00100101, the binary representation.

Anything stored in the computer, whether it be numbers, text, or instructions, is stored as a combination of 0s and 1s. A number, for example, can be represented as a binary number, for the binary number system conveniently just uses 0s and 1s. To represent a character (such as the letter "S") the computer has to use a code in which a byte sized binary number is used to represent the letter. The most prevalent code is the ASCII code.

Since numbers, characters, and instructions are all represented by binary numbers, a program that reads a particular part of memory has to know in advance what kind of information is stored there. The same combination of 0s and 1s will have widely different meaning if interpreted as computer instructions instead of as, say, text. Fortunately, the system normally keeps track of these matters for us.

The cat program, for example, assumes that a file contain text and treat it accordingly. It looks at the first byte and finds an eight-bit binary number stored there. Then cat uses the ASCII code to convert that binary number to a text character. If, for example, the byte contains an 83 (in binary form), then that become the character "S" (refer to the ASCII table).

Suppose, instead, that file contains numeric data stored in pure binary form. Typical Linux systems use a two-byte (16 bit) or even four byte (32 bit) word as a basic storage unit for integers. For example, suppose the number 3115 is stored in a two-byte word in a file. In binary form, the number looks like this:

```
0000 1100 0010 1011
```

If we used cat to look at the file, cat would interpret this single data item as two separate character byte: 0000 1100 and 0010 1011. In decimal these correspond to 10 and 43, the ASCII code for a linefeed and the + character, so cat would start a new line and print a + . (On most systems, the low byte, or last 8 bits of a word, get read first. In that case, the sequence would be printing a + sign and then starting a new line). On the other hand, a program that is expecting to read a file of two-byte integers will interpret the same two bytes as representing the number 3115.

Since all files are just strings of bytes, the cat program has no way of knowing how the contents of a file are meant to be interpreted. So if you cat a nontext file, such as a directory or a machine-language program, expect to get a lot of nonsense on the screen display.

Inspecting File Contents

Luckily, if you are curious, there is a Linux command that lets you look into nontext files. It is called od (for octal dump), and its options let you specify how it should try to interpret file contents. For example, the -c option of od interprets the file byte-by-byte in ASCII code, using the notation of the C language to represent certain nonprinting characters such as tabs and newlines. The -b option also

```
File  Edit  View  Terminal  Help
yusuf@yusuf-desktop:~$ od -cbd kihineh
0000000   K   i   h   i   n   e   h   !  \n
        113 151 150 151 156 145 150 041 012
          26955   26984   25966     8552      10
0000011
yusuf@yusuf-desktop:~$
```

interprets the file byte-by-byte, but as octal (base eight) numbers. The -d option, on the other hand, interprets the file word by word, printing the results as decimal numbers. Other options provide further choices. Let's try a few options on a text file (named kihineh) containing the word "Kihineh!"

The \n is a symbol (borrowed from the C language) for newline; it appears at the end of each line in a text file. It causes the cursor to move to the beginning of the next line when the file is printed on the screen, and for paper printers it causes the printing mechanism to begin a new line. The big numbers on the start and end (0000000 and 0000011) count, in octal, the cumulative number of bytes. Thus the 0000011 is 9 in decimal, and equals the number of characters in the file. (Newline character and if there is any space is also counted). Under each character is the corresponding octal ASCII code; thus the exclamation mark character is 041 in octal. The next line contains a decimal number corresponding to two-byte words. For example, 26955 represent the K and the i above it. The same content can have different meanings based on the way they are interpreted. Go ahead try these commands on your box and explorer for yourself.

Thats all for this month, stay tuned for the next article of this series which will take a closer look at the Linux file system file security, multiple file systems and device or special files.

PC Linux OS :
Radically Simple

Mohamed Malik | mohamedmalik.com

My first experience with a Linux system was back in the year 2006 with Opensuse 10.0. It was the very first Linux based operating system that I have used. Over the last few years I have used many Linux distros, many be due to the fact that I like to test and take a look at what other distributions offer when they make a new release. In this manner I have used Ubuntu, Linux Mint, Fedora, Mandriva & Knoppix but I have never used PC Linux Os. From the above distributions that I have tried, I mostly install them and test them. When I do test them I have a feeling that there is something missing. So after trying out there releases I always tend to come back and settle down to Mandriva. It has been my distribution of choice for the last 1 year. However very recently a friend of mine told me that PC Linux Os is a very good distribution and that I should try it. He also told me that it has very good hardware support, not that I have encountered any hardware errors in the past with any Linux distribution that i've tried, I downloaded and installed PC Linux OS on my laptop, which is an Acer Travelmate 6292 which has an Intel Core 2 Duo 2.0 GHz Processor and 2GB of RAM. After a couple of days using PCLinuxOS 2010.1 I must say that it ranks number 1 in my list of favourite Linux distributions
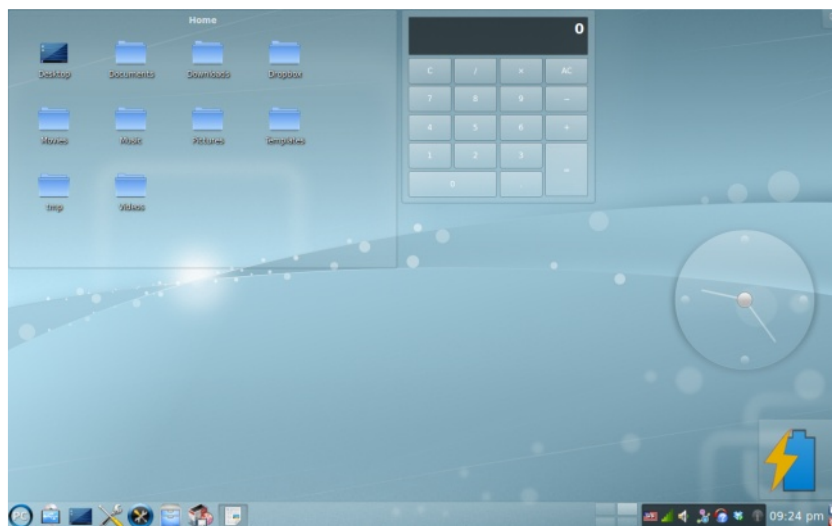
FEATURES

The PCLinuxOS 2010.1 list of FEATURES is very impressive. Nothing surprising there, all feature lists as when any new release comes out. That's probably why testing a release after reading such lists may result in a bit of a letdown, for the end result usually never matches the expectation. This time around it was pretty much the opposite, which is very significant considering I tested Ubuntu 10.04 just days ago.

Kernel 2.6.32.-bfs for maximum desktop performance: Right there. I installed PCLinuxOS 2010.1 on a pendrive, the same I had Fedora13 on, and the performance improvement is

sick! I can't even notice any drag when comparing it to actual installations on proper magnetic hard drives. Quite honestly, it is the first time KDE feels as responsive as GNOME.

Full KDE 4.4.3 Desktop: Awesome integration. This is by far the best implementation of the KDE desktop I have ever experienced. The developers have customized things where it matters, providing a much easier and intuitive interface.

PCLinuxOS 2010 Branding: Most applications have been tweaked so they use consistent branding, which looks great and feels tight and professional.

Mandriva on steroids: The Mandriva control center has been revamped, focusing on what matters. For example, the software center is not included, but managed separately via Synaptic. PCLinuxOS developers have made a very good job at keeping the best features found in Mandriva, making up for those which are not that great using different tools.

Enhanced hardware support: Video, Wireless and printer support is great, with many proprietary drivers already installed. In my case, having installed on a pendrive, I can boot from several different computers. I found no hardware detection issues. (Note this does not mean all hardware is supported. As usual, make sure your hardware is recognized successfully when you boot from the LiveCD)

Help and documentation: One element that should be highlighted is the impressive effort the developers have put into providing proper and meaningful feedback and help to the end user. I encountered several very helpful prompt messages, which I consider key for first time Linux users. On that same note, tools like AddLocale, Repository speed test and GetOpenOffice allow users to complete some of the most popular "things to do after installing..." easily and clearly, no use of the CLI required.
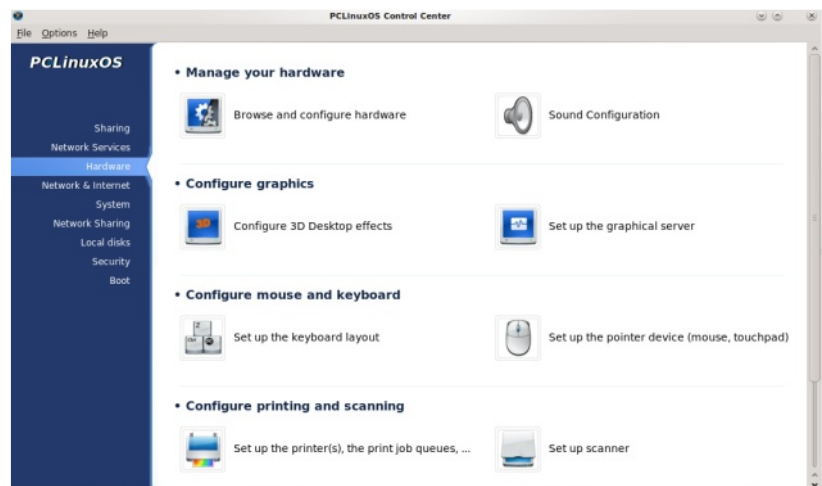
INSTALLATION

PCLinuxOS is one of those distros that enforce booting from the LiveCD before one can install. Once the desktop is loaded, installation may be triggered by double clicking a launcher if the user so desires. When I started using Linux I thought this was an unnecessary hassle. I liked Ubuntu's approach better, which enables installation straight from the LiveCD menu. I now believe the PCLinuxOS approach is best. By forcing the user to boot the LiveCD, there are higher chances that any potential hardware incompatibility is spotted before the installation takes place.

APPLICATIONS, CODECS & DRIVERS

The catalog of applications available by default in PCLinuxOS 2010 is great, almost feels like I chose it myself! I suppose KDE purists will not be very happy to see Firefox, Thunderbird or Pidgin as default Internet browser, email and IM client defaults, but I couldn't be happier. They just saved me a bunch of time uninstalling and installing.

Open Source advocates may also dislike the fact that PCLinuxOS 2010 includes a bunch of proprietary drivers, but for new users this is a blessing. I personally see reasons to support both approaches.

Firefox is preinstalled, supporting the latest version, 3.6.3. I was a Firefox advocate for a long time, but have lately been using Chromium more and more. In my experience, the speed difference was too significant to be romantic about it. All that said, I am amazed at how responsive and quick Firefox is under PCLinuxOS 2010. I am typing these lines from it and have no plans to install any other browser.

Thunderbird is also preinstalled in its latest version. I have not used this new version much myself, but it probably is more current and powerful than Evolution or Kmail. With email clients, though, it mainly goes down to personal preference, so I won't go on about it.

YES! Dropbox is installed by default. This was a BIG plus for me, as I had been unable to find a convenient way to install it under KDE. It is a breeze under PCLinuxOS, just need to enter the username and password, no exiting the session or anything like that required.

I want to take a bit of time to talk about a number of tools that I feel are great in making life easy for end users: Repository Speed Test, Add Locale and GetOpenOffice. Repository Speed Test runs a check on all the repository servers available and recommends the optimum setup. If the end user agrees, the application automatically applies the corresponding changes to the sources list file. When done, it starts Synaptic so software can be downloaded. I particularly liked the information messages provided throughout. They were clearly explaining what was happening as a backup copy of sources.list was automatically taken before actually committing the changes.

Similarly, Add Locale easily makes all the necessary adjustments to add and setup languages. In fact, I often had issues installing Dhivehi language in KDE implementations from Fedora, OpenSuSE and even Mandriva. It was doable, of course, but not as straightforward as in GNOME distros like Ubuntu. Even when I managed to get it to work, not all applications would display the right language settings. With Add Locale it was a breeze and once again the information messages were spot on.

Finaly, GetOpenOffice is nothing short of amazing. When you run it for the first time, the tool asks for the language you want to install, then downloads and installs the packages and menus automatically. If run again, the application detects there is a previous installation and prompts the user if s/he wants to reinstall or uninstall. Nitpicking a bit, I would say I liked how progress is shown through a terminal like interface, but I guess standard users couldn't care less. I think it would look even better if a GUI progress bar was displayed, allowing for such minute detail monitoring as an optional feature.

NOTE: I am aware not all these tools have been developed by/for PCLinuxOS, but it is how well they have been selected/integrated that made a positive impression on me.

All in all, I think all three applications are a very nice step forward towards making the Linux desktop experience accessible to anybody. In fact, to be completely honest, PCLinuxOS 2010 is the first distro that I feel is ready for "The year of the Linux desktop" challenge. It is powerful yet clear & simple. There are some areas that could use some polishing, but it is a huge step in the right direction. Provided hardware is fully supported, as has been the case on all five machines I have tested it on, I really feel anyone can enjoy PCLinuxOS 2010.1!

The network manager is the same used in Mandriva, not awfully fast, but quite solid. Once again, it provides a friendly interface, which among other things, allows for wireless scan refresh (one of the main weaknesses in the GNOME network manager applet as of today). On top of that, I was very pleased to see that my Vodafone HUAWEI USB 3G modem was recognised on the fly, successfully setup in a couple steps and working right away.

NETWORKING & SECURITY

PCLinuxOS 2010 also provides a very clear and comprehensive GUI interface to setup the firewall. As expected, iptables policies are set to accept by default, but no ports are listening. In the GUI interface this translates to showing the firewall as disabled (the actual option displays "no firewall"). Enabling the firewall is as simply as un-ticking that option.

WHAT ARE YOU WAITING FOR!

As you probably expect at this point, I absolutely recommend PCLinuxOS 2010. I have been using it for only a couple days, but I have the feeling that it is the best Linux release I have tested in years.

PCLinuxOS 2010.1 is excellent for any kind of user, but probably most recommended for new comers. It brings down the need for CLI typing to almost zero.

Don't take my word for it, DOWNLOAD it and give it a try! You will not be disappointed.

Enjoy!

How to install VLC 1.1.0 in Ubuntu 10.04 LTS

Mohamed Malik | mohamedmalik.com

VLC is a great piece of software, it is one of the most prominent open-source software available on the planet. It is the player used by many people and individuals as the one and only media player that they use. The VLC team recently released the next iteration of the popular software with many new features including.

- GPU decoding using VAAPI for H.264, MPEG-2 and VC-1

- DSP decoding using OpenMax IL

- Improved seeking for High-Definition (HD) MKV files

- Support for Blu-Ray PGS subtitles

- Support for HD-DVB subtitles

- Support for VP8, MPEG-4 lossless and Indeo5 video codecs

- Encoding and decoding of the WebM format

- Support for Atrac1, FLAC 6.1/7.1, Vorbis 6.1/7.1, MPRG-4 ALS audio codecs

- DVD-Audio files support

- Optimized for SSE3/SSE4 and ARM Neon

- Improved streaming performance

- New x11, xv and glx modules

- ADPCM support for FLV files

- Rewrite of the playlist (tree structure, input preparsing ...)

- and much more!
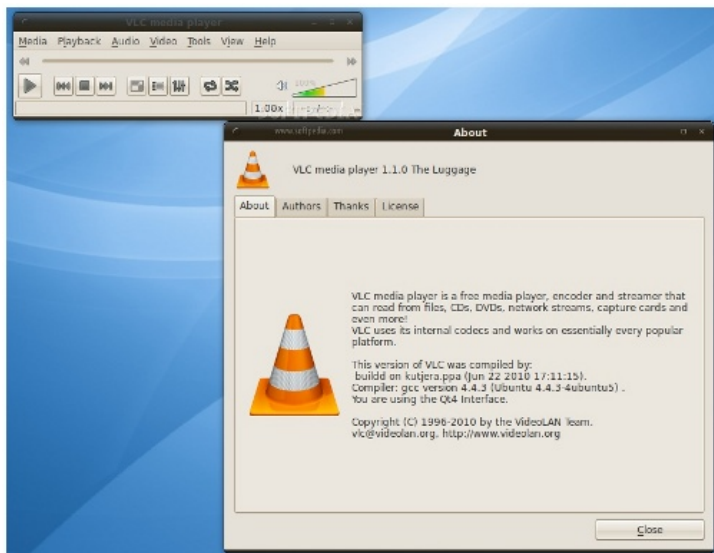
However lastest VLC is not supported officially by Ubuntu, therefore to install the latest version of VLC on Ubuntu you need to set up a third party repository. The Current version of Ubuntu has VLC 1.0.5 on their repository.

To install the latest version of VLC media player on Ubuntu 10.04 LTS, go to system>administration>software sources and add the following line to your sources.

deb http://ppa.launchpad.net/c-korn/vlc/ubuntu lucid main

After you add the line close the software sources and it will ask you to reload the repositories, press reload when asked. If your update manager setting is set in a way that it pops up when ever an updated package is available press update on the update manager. If it does not pop up don't worry. Go to system>adminstration>synaptic and search for VLC and give a right click and select mark for upgrade and then press apply, the synaptic package manager will then download the necessary updates and install them on your computer. That is it!! Now you have the latest version of the popular media player.

VLC 1.1.0 is now lighter, faster, especially with High-Definition (HD) files. It can now be personalized with add-ons and scripts, has improved support for cover art and metadata and an integrated playlist (for the Qt4 interface) with multiple views. I've tested VLC with many video and audio files and I did'nt find any issues. It played all the files flawlessly. Oh, and the best part is that you don't need any codec pack to play your favorite streams.

Clementine : Music Player For Those Who Just Cannot Forget Amarok 1.4

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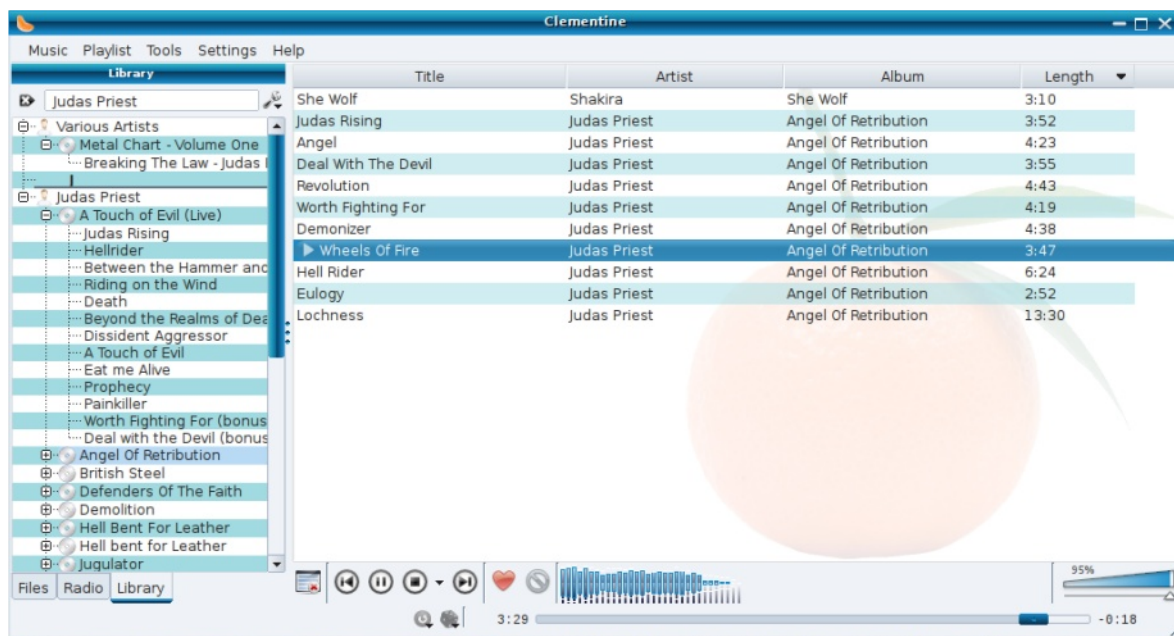
Amarok 1.4x series was one of the best music players which were produced during recent years, however Amarok is based on KDE technologies. The KDE team decided to migrate the entire KDE code base to Qt4. So did the Amarok team. For the Amarok team, the version 2x of the Amarok series is based on the Qt4 frame work meaning that the 1.4x series is no longer supported and discontinued.

Amarok was not only ported to Qt4, the entire audio player has been written from scratch and has been transformed into an entirely new software, however some of the main functions still remains the same. The first releases of Amarok under the version 2x was criticized by many users. Some even said that the Amarok teamed turned the best audio player available in Linux system into a piece of crap. However with the recent releases of Amarok things have changes, the performance of the player the features and everything has been back on track. Mostly importantly the features has been polished and Amarok is very reliable and stable with the current releases, I'm running version 2.3.1 beta 1 and so far it has not crashed a single time, even though it is a development version of the player.

Now back to the point, even though Amarok is gaining former reputation and some die hard fans, their is a new audio player which will win the hearts of those who really loved the Amarok 1.4x series. Clementine is the QT4 port of Amarok. It comes with all the major features that were included in Amarok 1.4x series including searching from the library, last fm feature, where a user can listen to Internet radio streams. It also has the function of importing M3U playlists as well. It also support mass tagging of media files. As with the current and previous Amarok releases, it has the simple drag and drop interface to create playlists.

The most interesting feature in Clementine that it is cross platform, meaning that it can run on many operating systems like Linux, Mac OS and Windows. For those of you who really miss the Amarok 1.4x series, Clementine is the ideal music player.

For more information on the Clementine project visit
http://code.google.com/p/clementine-player/

How to enable Video Thumbnails in KDE4?

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With the introduction of KDE 4 in Jan 2008, the previews or thumbnails of video files in the file manager has been an issue that bothers users of KDE, however a new simple program is there which could be used to enable previews in the file manager. Here is how to do it!

If you are using Kubuntu the package is available in the Kubuntu Software repositories. Go to Start menu and open Kpackagekit and search for "ffmpegthumbs", click install package.

If you prefer command line method open up Konsole and type in sudo apt-get install ffmpegthumbs when prompted for the password type in the password and your are good to go.

If you are using a Distro like Mandriva you need to addsome third party repositories into your system. The easiest way to enable thirdparty repos is to enable the easy rpm repo. To do this go to http://easyurpmi.zarb.org/. From there choose your Mandriva version and then add PLF media to your sources. There are two ways to do this, one is the graphical way and the other is command line way.

The screen shot below shows how to do it. If you prefer the GUI way then click add PLF media and it will download a small file. When the file is opened it will prompt you to type in your root password. Type in the root password and the media will be added to the package list. When this is done, go to start menu applications>tools>system tools> configure your computer>software management>install and remove packages, and search for "ffmpegthumbs". If you prefer the command line method, in the easy rpm website there is a link Switch to manual selection and follow the instructions that is seen on the screen shot.

Once the package is installed open the file manager. Mine is Dolphin. Go to setting>configure dolphin. Then go to general and then previews and click on the box video thumbnails (ffmpegthumbs). See screen shot below.

Finally, go to view>previews. Provided that you have installed the restricted packages that enables you to play video files you will see the video thumbnails in your file manager.

Note: I didn't try this in Konqueror but with the package installed it should work with it as well. The screen shots below shows before and after installing the package.
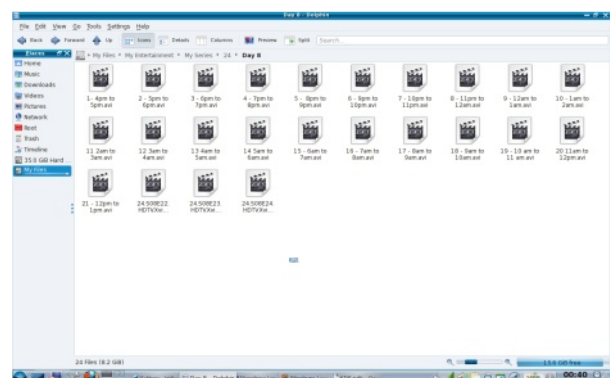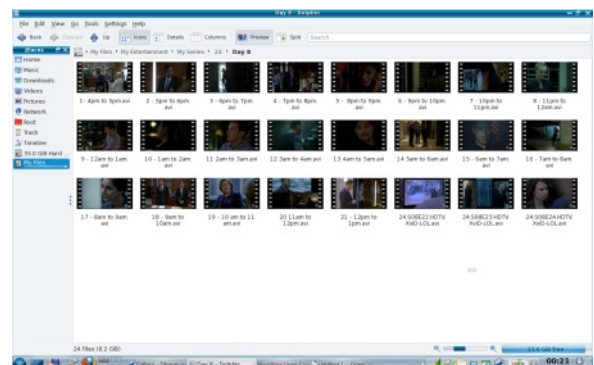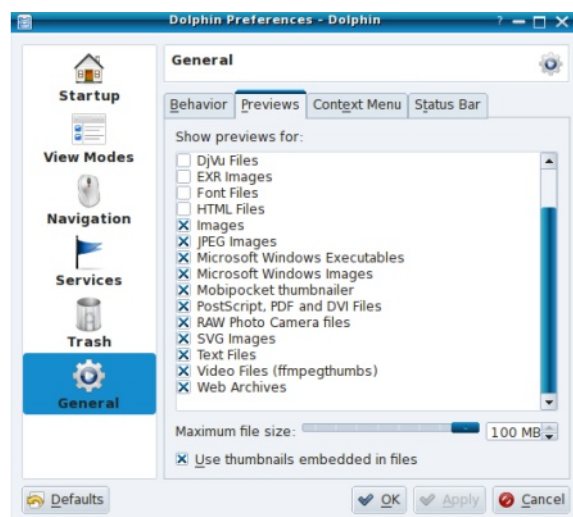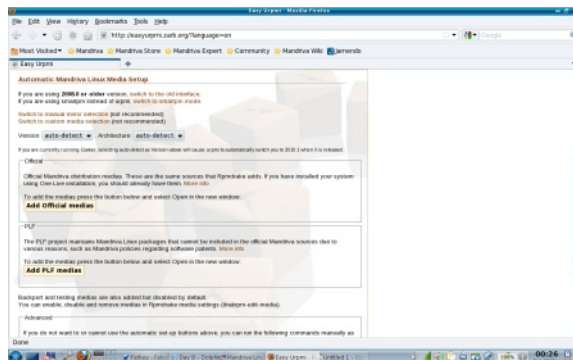
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