

Rapotic 3D Development Team

Team Description Paper

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Abstract. This paper describes the specifications of a Live and Installable Linux Distribution. It has the 3D and 2D server installed, with a lot of other stuff including documents and development applications.

If you want to use the server, without any action, you can use the Live version, and if you want to use it in your home, or maybe as server, you can install it, too.

1 Introduction

One of the biggest difficulties for newcomers in Simulation League is the Linux Operating System. Since many of the newcomers are Windows users, they will meet a completely different kind of operating system, with a wide range of choices which makes them confused.

In the first step, they will see a wide range of distributions containing Debian, Fedora, SuSE, Mandriva, etc. It's over 400 official distribution. And many other different stuff like having choice to choose the window manager, unlike Windows, and a different compiler and compiling system and working in the text mode.

Even for non-newcomers, there are some errors during the server compilation, and much time should be spent on these stuff which could be spent on agent coding instead.

Our solution is to have a special Linux Distribution which is customized for Robocup. In this case, we are able to have a standard and ready platform, and result is the decrease of needed time which should be spent on low level stuff like compiling and solving distribution dependent problems.

2 RobocupOS

The Distribution name is RobocupOS which is the brief of Robocup Operating System.

It's a Live and Installable Distribution.

1. Live Distribution: You can power on your computer, insert the RobocupOS CD in your computer, and boot it up with CDROM, and it works. There is no risk to lose your hard disk data, and don't need any special configuration.
2. Installable Distribution: If you want to use it permanently, you can install it. So after each restart, you will not lose your configurations and stuff, and absolutely it will be faster.

3 Standardization

At the present, there is not an unique standard for the teams. Each team use their favorite distribution, and any Linux distribution could be used in Open competitions. In case of having a special distribution, it can be used as a standard distribution for testings, and using in competitions.

The server scripts for starting NFS and running automation is also included, so it will decrease the time of starting up servers, and in case of getting a hard damage, or lack of time even for installing it, the live distribution can be used, and the server will be ready in some minutes.

Another feature is freedom to change the packages. For example, we can not force Debian to change their packages because they are not compatible with the current server, or to patch their server for jiffies timer! But when the distribution is for the robocup community, all the packages could be changed, and needed patches applied to the packages.

By the way, it's will not be just for 3D Simulation League. The 2D Server and Rescue Server is also included, so it could be used as a standard distribution for all the simulation leagues.

4 Compatibility

There are two kind of Compatibility. Software and Hardware Compatibility.

4.1 Software Compatibility

The distribution is based on Debian Etch. So 95% of the packages from Debian Repository should works. At the current state of Debian Etch, there are over 18600 packages available in the Debian repository which can be used easily.

Also we can enjoy using Debian Advance Packaging Tool (APT).

4.2 Hardware Compatibility

The current Hardware Detection system is taken from the famous distribution KANOTIX. It has a large community with the best detection system we found. At the moment, our team are testing it using many Desktop and Laptop Computers to check the compatibility, and solve the problems.

The current biggest problem is for WinModems which most of them has no driver for Linux, and can't be used in any Linux distribution.

5 Softwares

It has most of the softwares which an user needs to do the usual works with computer including watching movie or write emails and opening document files, and all the needed stuff for development including the needed libraries, header files, compilers and IDEs. Also NTFS3g patches are installed which let users to have write access in NTFS partitions.

In case of the absence of a package, user can get it from Debian Etch Repository and use it, and request it in our website, so if we got many requests for that package, we will add it to the next release of the distribution.

5.1 Window Manager

The current decided Window Manager is Gnome. It's because most of our team members using Gnome, and we can have the a better optimization for Gnome.

We didn't add KDE together with Gnome to have a less ISO size, but in case of having many requests from the community, we can release another distribution, maybe with the name of RoboKupOS, with the same specification but include KDE Window Manager instead of Gnome.

5.2 Development Tools

In the current state, CodeBlocks and Anjuta are available as IDE, GNU Compiler Collection as compilers, Glade as GUI Designer, CVS and SVN and RapidSVN as Version Controlling System and all the needed libraries for server with headers plus some additional useful libraries like WxWidgets are available.

In additional to the Robocup Server documents, some other C++ and SVN free ebooks are available in the distribution.

Eclipse with C++ plugin is candidate to be added, but we still didn't add it because of its huge size.

5.3 Additional Tools

Some other stuff like OpenOffice, Firefox, Gaim, VLC and MC are included for the daily works. So user don't need to download any additional packages in normal cases.

6 License

As far as the robocup community has not any special attention on licenses, unlike Fedora or some other communities, RobocupOS is not a completely Open Licensed Distribution. There are some drivers like official Nvidia Driver or some software like Adobe Flash Player Plugin which have their own license and they are included in the distribution.

These licenses should be accepted by the user before starting work with the distribution.

8 A Public Tool

Unfortunately, the last results of 3D Development Teams didn't used widely by other teams, maybe because other teams had not access to results before the competition, and after the competition a lot of things were changed so their results were useless with the new server.

RobocupOS is designed to be used by other teams, and not only by our team, and the first stable version of RobocupOS will be released in April, and can be used by other teams before the competition.

Of course many teams, specially newcomers, will start using it, and can vote for us in the competition not only based on what we demonstrate, but what they have worked with it.

9 Usage Summary

1. Everybody can test Robocup 3D Server (and other Robocup Simulation Servers) in some minutes without need to install anything.
2. If some of the team members have some problems to install Linux, for example because of SATA2 Linux incompatible Controller, they can use the Live Distribution for development, and save the agent codes in the Windows Partition. No installation needed.
3. If it will be used as the standard distribution for competition, the teams who like to use their favorite distribution, for example Fedora, doesn't need to spend a lot of time to install the distribution which will be used in the competition to test their binaries. They can easily start the system with the live distribution and test the their code in some minutes.
4. The teams which has Internet Connection problem, will have many problems

with some distributions like Ubuntu, because can't receive any package using apt-get, and downloading them one-by-one is so hard because of the package dependencies. RobocupOS contains all the needed packages for usual usages, and they just need to install it.

5. The newcomers doesn't need to struggling with compiling and installing the server for a long time, and they can just install RobocupOS. They will have everything ready now.
6. The distribution release announcements will be sent to some popular websites like Distrowatch which has a huge amount of daily visits. It may attracts many Linux Users to Robocup Competition which haven't heard about Robocup yet.

10 Real Story

In our one year experience of participation in Robocup, we got some problems that shows us this project is highly useful, specially for newcomers.

1. Last year we spent about 1 month just to start the Linux and simulation server in all of the team member's computers. if we had something like RobocupOS, it takes 3 days maximum.
2. Last year, we participated in the Roboludens 2006 in Netherlands, and we just sent one member to the competition. Unfortunately, his laptop was corrupted in an accident exactly one day before he went. He bought a new laptop in the same day, but he couldn't start up the Linux on the laptop because of the SATA controller problem until one hour before the deadline to give his binary file. Since this problem was just about installing, if he had a Live Distribution including the 3D Server, he could use it without any problem.

11 Additional Activity

The current sserver website is completely out dated, and most of the other teams are busy with their own team, so can't help for updating the website.

Since checking the website is the first step for newcomers, they may highly confused by its information. So, our team members can spend time to update the website as a 3D Development team.

It will be useful even for non-newcomers team, because can check the news without need to search and look into the mailing list.

12 CDs

Both Live and Installable distribution are available in one CD, with a installation system like Ubuntu Dapper. Also there is a seperate CD which is not needed for starting Live Distribution and includes some additional packages.

13 References

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