

Some technical  
information about  
#rosa-devel

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ROSA Planet

Just Open!

## Contents

Introduction.....	3
Desktop.....	3
Alternative methods of ROSA Desktop installation.....	3
Tracking status of packages in ROSA 2012 Desktop.....	4
Changes in options management of system proxy.....	5
Server.....	5
New features of ROSA Directory Server: DDNS and LDAP integration with Bind.....	5
Cloud technologies and services.....	6
2Safe.....	6
Development infrastructure.....	7
ROSA Desktop 2012: from RPM 5.3 to RPM 5.4.....	7
Distribution updates and backward compatibility.....	8
Custom checkboxes in Bugzilla.....	9
Monitoring of ROSA repositories.....	10
Upstream.....	11
Segmentation fault in c++filt.....	11
Authors.....	11

## Introduction

Good news everyone!

This is the first publication of our technical bulletin — the short news summary about development which takes part in ROSA. Because this is the first issue, it has some defects and can be rough a bit. We will correct them next times for sure.

While publishing such summaries, we'd like to orient on the wishes of community. So it will be wonderful if you send all your wishes, questions, comments on [rosa-point@rosalab.ru](mailto:rosa-point@rosalab.ru).

## Desktop

### *Alternative methods of ROSA Desktop installation*

Traditionally, all ROSA operational systems install on the hard disk via writing iso-files on Flash or DVD. But you don't need to write image on removable storage if you have any pre-installed Linux OS and iso-file of ROSA OS. You can load from iso-file using bootloader of your distribution. Here is the manual:

[http://wiki.rosalab.ru/en/index.php/Booting\\_ROSA\\_from\\_iso\\_file](http://wiki.rosalab.ru/en/index.php/Booting_ROSA_from_iso_file)

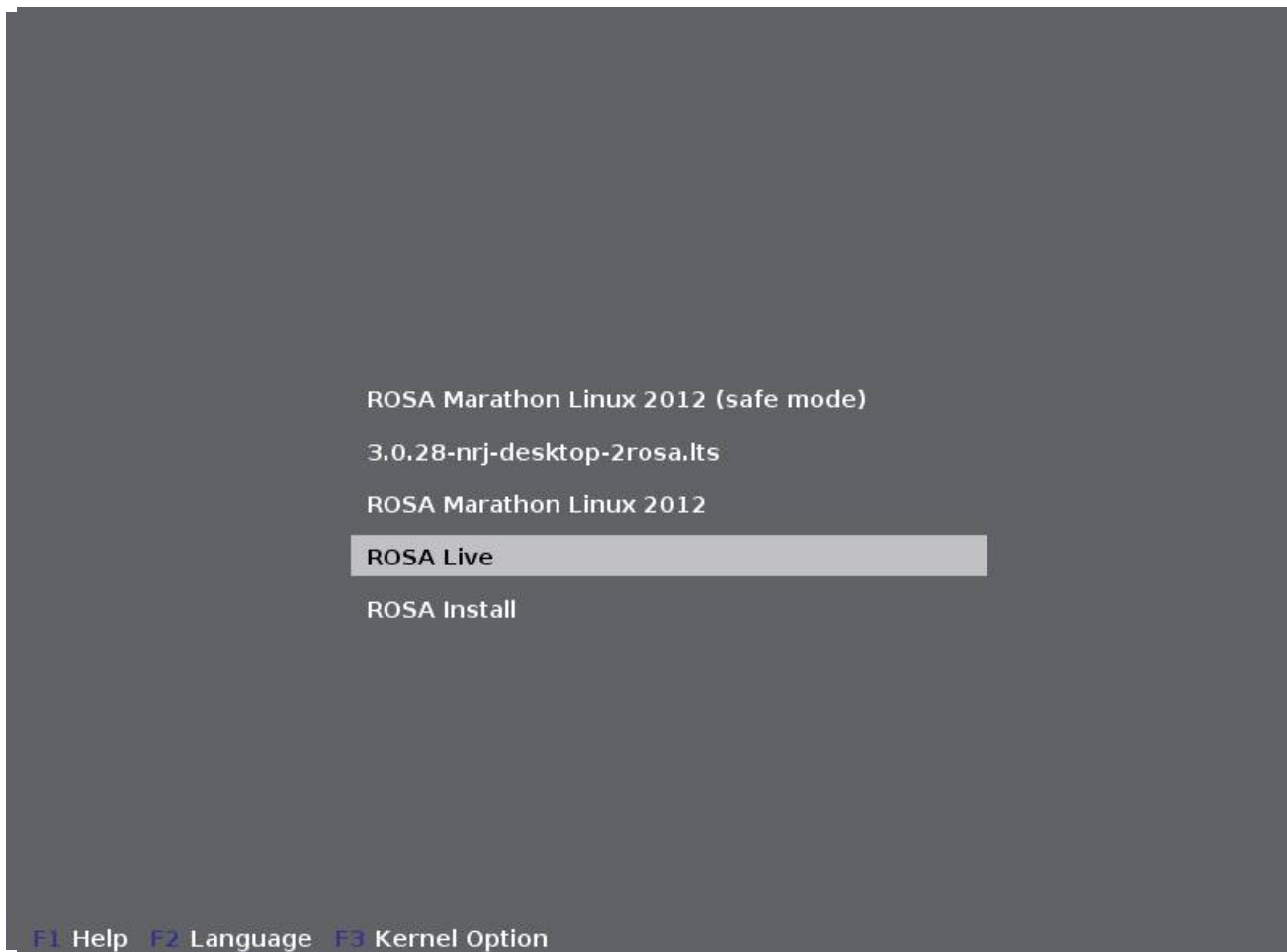
If you still work in Windows, you can install Grub4dos boot loader (<http://diddy.bootland.net/grub4dos/Grub4dos.htm>). Configure it as described in the manual for Grub.

We understand that a lot of our users use virtual machines for trying new systems. And the most popular agent for this in Open-Source world is VirtualBox. For those people who want to use VirtualBox to try ROSA we have prepared this manual:

[http://wiki.rosalab.ru/en/index.php/How\\_to\\_Install\\_ROSA\\_in\\_VirtualBox](http://wiki.rosalab.ru/en/index.php/How_to_Install_ROSA_in_VirtualBox)

Usage of other means of virtualization won't be difficult, but in some cases you may need to additionally configure them. For example, if you work in Mac OS X and want to use Parallels Desktop to launch ROSA, tips from Max Kupriyanov may come in handy for you: [http://wiki.rosalab.ru/en/index.php/Installing\\_Parallels\\_Tools](http://wiki.rosalab.ru/en/index.php/Installing_Parallels_Tools)





### ***Tracking status of packages in ROSA 2012 Desktop***

ROSA Updates Tracker service designed for comparing versions of ROSA packages and related systems with upstream, now supports our development release - ROSA 2012 Desktop: <http://upstream-tracker.org/updates/rosa/2012.1/>

At the moment it provides complete comparison between packages of ROSA 2012 Marathon, Mandriva Cooker and Mageia Cauldron. The data is collected by automated tools and in some cases we can receive «strange» results, but for overwhelming majority of packages it should work correctly. Also for some packages the service can fail to define by itself URL which is necessary to download fresh packages from upstream. But we are improving the service constantly and over the time «white spots» will disappear.

Note that at the moment of writing a part of packages wasn't rebuilt, so for this kind of packages we haven't got any statistics.

For shared library packages, changes in which are tracked by <http://upstream->

[tracker.org](http://upstream-tracker.org), analysis of compatibility between different versions is available. This analysis can help maintainers to estimate how harmful will it be to switch to the new version. For example, this is the report about compatibility of different versions of lame: <http://upstream-tracker.org/versions/lame.html>

### ***Changes in options management of system proxy***

The current scheme of options management of proxy has one problem: in ROSA two different utilities have been used for this operation. The first one was located in KDE Control Center and allowed to change options of proxy only for KDE apps and didn't affect other apps, such as Firefox or Chrome. The second utility was located in ROSA Control Center (drakproxy utility). This utility allowed to manage options of proxy for the whole system and for all accounts. But sometimes you may need to use different options for every account.

To solve this problem, developers from ROSA UI department (UXTeam) refined KDE Control Center. Now it can change options of proxy for the whole system and ROSA Control Center is useless for this action.

Note that this is the first step of processing this utility. In the future, specialists from UXTeam are planning to improve this utility, so it will be able to set different proxies for different accounts and a single option for the whole system, too.

At this moment all changes pass final tests and will be available from ROSA Update Center in [near future](#).


## **Server**

### ***New features of ROSA Directory Server: DDNS and LDAP integration with Bind***

While infrastructure of company is growing, system administrator faces the problem of storing and managing the network configuration. One part of the problem is to keep DNS records up to date for all hosts that are connected to the network and track of network updates and modifications.

For this purpose, we have made changes in ROSA Directory Server that allow to automate this process at acceptable level, and also unify and ease the process of DNS records updating.

The most modern way is to use LDAP for storing such information. And the Bind



name server can work with it. But in usual situation, such configuration takes a lot of routine operations: checking correction of config-files, restarting of demons and checking the operability after all these actions. This scheme works good only if you have not more than ten hosts. And what if there are more?

For this situation we have developed several components: overlay for LDAP — dnsmod - and ldapbindfs virtual filesystem.

**Dnsmod** allows to provide ability of edition DNS data directly in LDAP in mode of dynamic area updating, using special web-interface or external app. But, the main purpose of dnsmod is automate tracking data changing operations in DNS tree records. For example, next operations are tracked: operations of adding, modification, deleting and changing DN record in LDAP.

**Ldapbindfs** is a file system that works through FUSE and designed for work with files of DNS area. All operations with area file are displayed as operations of adding, writing, deleting and modification data in LDAP.

It is obvious, how dynamic DNS is involved here, i think. It receives all necessary data from LDAP and updates information about records in appliance with them.

The most interesting thing in this decision is that we don't need any changes in BIND. Ldapbindfs file system works in a way that named-server doesn't suspect about LDAP server and continues to work with standart config files. Thus, the unified format of data storing is provided, as well as means for its actual and easy updating. Administrator only needs to input necessary data from web-interface.

## Cloud technologies and services

### **2Safe**

At full pelt we are developing our service of cloud data storage — [2Safe](#). As you likely know from our announcements, we have already implemented the functions of collaborative usage of directories and files by users and direct links to the objects.

Soon, we are expecting the switch to the new personal accounts, where users will find some new interesting features.

## Development infrastructure

### *ROSA Desktop 2012: from RPM 5.3 to RPM 5.4*

One of the key updates in ROSA Desktop 2012 at system level is a switch from RPM 5.3 to RPM 5.4 together with update of accompanying tools (such as [spec-helper](#)). The RPM 5.4 branch has been developed for more than 1,5 years. During the first year of development it was considered as experimental, but now the source code is stabilized and thoroughly tested, so RPM 5.4 is ready for production use.

While developing the 5.4 branch, the attention was paid on stability of work; now we can claim that a chance of RPM 5.4 database corruption is significantly lower than in case of RPM 5.3 (actually nobody has detected any cases of RPM 5.4 database corruption, while we do have known cases for RPM 5.3). In this case, stability doesn't wound the work speed, which has been increased in average. In particular, refactoring of macrodefinitions in RPM was performed to kill off loading of unused macros at every rpm start.

Besides refactoring, increasing stability and bug fixing, RPM 5.4 has the following features: support of typelib(...) and 'set:vision' dependencies; support '~' in package names (for compatibility with RPMv4); basic support for ODBC and ability to work with SQL queries; However, these features are only valuable for maintainers. But some features of the new RPM and related tools will be noticed by users of ROSA Desktop 2012, as well: With switch to the RPM 5.4, we have started to use embedded generator of RPM dependencies (instead of Mandriva's generators). This allows to work consolidate work on dependency generators with upstream. Of course, while switching to the new toolkit we have had some issues: dependencies naming in the new RPM5 generator differs from that was used in Mandriva, so some redundant names were dropped. Because of this, we have to adopt spec files and clean them from dependencies, that are no longer available from other packages after building with the new RPM.

- Rpmbuild became more intelligent while enumerating files which belong to the package. For example, if in the %files section you list files located in some directory, you don't need to explicitly mention this directory. At the same time rpmbuild is strict with respect to the duplicated files: if at first you specified a directory in the %files section and then — any file from that directory, then this will be perceived as excessive information and building of such package will be terminated with error.
- Behavior of %find\_lang macro used to find localization files in packages, has been changed. Previous implementation returned empty list in case when such files are absent. New find\_lang returns error in this case. This change should

force deleting of `find_lang` invocation from process of building those packages where `find_lang` call doesn't make sense and only eats time.

- Now `spec-helper` automatically deletes `*la-files`. These files aren't necessary now, but they were still packaged within a lot of packages. While preparing the new release, we have performed clean up of spec files in the main repository, and now there are no `*la-files` anymore.

It can seem that the changes are not so great. Nevertheless, they influence the whole package base and we have spent the tremendous part of efforts adopting packages to the new RPM5 while preparing Alpha-release of ROSA Desktop 2012.

### ***Distribution updates and backward compatibility***


From developer's point of view, support of a released distribution is concluded principally in bugs removing and repairing problems with safety of its components. To solve these problems, usually patches are created or software is updated to the newer versions, where problems have been already solved. Majority of such updates affects only one application, but in some cases changes can involve other components, too. It is a really hot topic for shared libraries updates, because they are used by a lot of apps. Updating or even patching can lead to the change of interface (API/ABI) of library and, as a consequence, can lead to inoperability of programs. Half the trouble, if this program is from distribution repository — we can track this situation and just update the application. But if users have installed third-party software, then they won't be happy to know that their software doesn't work anymore.

Three months have gone since ROSA Marathon 2012 was released, and we have updated hundreds of packages, including shared libraries. Undoubtedly, every update is checked by our QA department, but chance of passing «bad things» is always here. So we have decided to conduct a research: how much API from «original» ROSA Marathon 2012 differs from updated image RP1.

For research, we have used the ABI Compliance Checker tool which is available at <http://upstream-tracker.org>. Results are there: [http://upstream-tracker.org/compatibility/ROSA\\_2012\\_LTS\\_to\\_ROSA\\_2012\\_LTS\\_RP1/x86/abi\\_compat\\_report.html](http://upstream-tracker.org/compatibility/ROSA_2012_LTS_to_ROSA_2012_LTS_RP1/x86/abi_compat_report.html).

You can see that library updates didn't lead to the changes in API/ABI. Some libraries got new functions, but this doesn't influence backward compatibility. From serious modifications, we can highlight adding 'const' modifier to the return value in `libabi` functions (according to the documentation, 'const' was supposed to be there for a long time, and now it is just stated officially), and also deleting of some functions from





libdc1394 (for removal conflict with libusb). So if you have installed some third-party apps — don't worry, they will work after update.

Of course, three months isn't a big period (especially if we compare it with five-year support of Marathon), but we will try to track backward compatibility and to guarantee the work of installed applications.

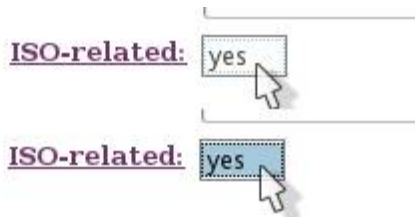
### ***Custom checkboxes in Bugzilla***

You know that [Bugzilla](#) is a popular bug tracking system which is also [used by us](#) for bug tracking in ROSA Desktop. It has an interesting option — adding «custom fields» into tickets. So you can create a new field from «admin» without code correction, and this new field can be filled according to the certain rules and can be used for filtration and looking for bugs.

But this functionality isn't across-the-board. For example, authors of some bugtracking systems [actively oppose](#) it. But Bugzilla provides it and we actively use it, for example, to give user the input field for the name of RPM package (in the nearest future it will connect with [maintainers database](#) on ROSA ABF). Next we need additional field to mark bugs if their fixing require modification of scripts used to create ISO image of the distribution. It seems really easy: just add «checkbox» and deal with it. But we have faced a problem.

It turned out that Bugzilla doesn't have «checkbox» custom field. Fields can be of the «stroke», «number», «bug», «drop-down list» type, and even «multiply selection», but there is no «checkbox»! So we need to add it.

And we start to think: what type from the mentioned above is matching the checkbox? Maybe there is a logic, but it isn't obvious? Really, there is one possibility — «multiply selection» with only one option. So you can choose it or not — it is exactly how checkbox works. So here how it works:



It looks like checkbox. If it is marked — it is checked. But this interface would be clear if there was more alternatives than one. Now it looks like a bug or input field. We have decided automatically convert places where only one option is available into checkboxes. So users will have clean and simple checkbox:

Of course, we could use a keyword. But we think that it isn't handy enough: you have to remember about them and use keyboard to populate them with data. Checkbox is always in sight — just click on it. This decision is deployed on ROSA Bugzilla and added to [regulations of using bugzilla](#). If you want to install it on your bugzilla, here



is a patch for bugzilla 4.2: [File:Bugzilla 4.2 checkbox.patch](#) BSD licence.

### ***Monitoring of ROSA repositories***

On site <http://upstream-tracker.org>, which is supported by ROSA employees, two sections are added with statistics data about status of our repositories.

First section provides reports about packages with absent dependences (they are generated by [urpm-repoclosure](#)):

[http://upstream-tracker.org/repoclosure\\_logs/](http://upstream-tracker.org/repoclosure_logs/) Second section has information about old packages (for those we have newer versions in repositories), those can be deleted from servers (report is created with [urpm-repomanager](#)): [http://upstream-tracker.org/repomanage\\_logs/](http://upstream-tracker.org/repomanage_logs/) At this moment, reports are displayed as simple text (as they are generated). In future we are planning to realize more functional representation and integrate reports with ROSA ABF. Statistics on upstream-tracker.org are updated daily.

## Upstream

### ***Segmentation fault in c++filt***

While conducting recent analysis of compatibility between ROSA 2012 Marathon and updates from RP1, we have faced an unexpected problem: included in **binutils** utility **c++filt** (it translates mangled-names of binary C++ symbols into human-readable text: so we can see `std::numeric_limits<float>::is_modulo` instead of `_ZNSt14numeric_limitsIfE9is_moduloE`) crashed with segmentation fault at big amounts of data. It seems like nobody has forced it to work with dozens of thousands of names at once :) However, the issue trivial and binutils developers solved it in a few hours after the bug was filed ([http://sourceware.org/bugzilla/show\\_bug.cgi?id=14526](http://sourceware.org/bugzilla/show_bug.cgi?id=14526)).

**Now c++filt can work with gigabytes of data :)**

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