The Free Software Demonstration Platform

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For today the Siberian Branch of the Russian Academy of Sciences faced with license software environment creation and further development task. It seems appropriate the SB RAS institutions transfer onto free and open source software. One of key conditions for this process success is users' readiness for transition on free software. For this purpose the free software demonstration platform is organized on the SB RAS Foundation of Algorithms and Programs basis.

Proprietary software; licensing; free software; Linux; open source software; Ubuntu; scientific software; virtualization; software environment; software demonstration

I. INTRODUCTION

For today the Siberian Branch of the Russian Academy of Sciences faced with license software environment creation and further development task. Such an environment should provide effective information support of the SB RAS organizations core business activity while license purity upholding of all software used on the Siberian Branch institutes personal computers, servers and other hardware. In terms of its licenses all software can be divided into two main classes:

- **Proprietary software** - software that is privately owned by the authors or copyright holders, reserving monopoly on its use, copying and modification;
- **Free software** - software in which user's rights to freely use, study, modify, and distribute software are legally protected by free licenses copyrights.

Separately **open source software** should be noted - such programs source code available for viewing, study and modify. Its license does not require that it is given free of charge. At the same time many of the most successful open source projects are free.

The Siberian Branch of the RAS institutions mainly used proprietary software historically. A striking example is Microsoft Windows family operating systems and applications, working into these systems control. At the Siberian Branch software environment further development planning it seems appropriate the SB RAS institutions transfer onto free and open source software. This will avoid technological dependence on closed proprietary solutions, as well as reduce software purchasing costs. However existing researches [1] show that for today neither proprietary nor free software are not perfect, each of them have their advantages and lacks. Based on the aforesaid, for the Siberian Branch institutes scientific and organizational activity maintenance it should develop license pure and effective software environment based on all software types use. Thus in the long term the share of free and open source software used in the SB RAS organizations should be gradually increased. One of key conditions for this process success is users' readiness for transition on free software. For this purpose **the free software demonstration platform** is organized on the SB RAS Foundation of Algorithms and Programs [2, 3] basis. The platform primary goals are granting to free software potential users full volume of information available for each program and also its work demonstration on the Foundation technological capacities. Today the need for such platforms does not raise any doubts, their creation questions rise often enough [4, 5]. The SB RAS FAP demonstration platform includes the following main components:

- The free software demonstration pages catalogue (scientific and a system-wide).
- The demonstration server preloaded with the Ubuntu OS SB RAS corporate variant, free software, developed in the SB RAS, and third-party free software.

II. THE DEMONSTRATION PAGES

The demonstration pages are the free software for Linux OS catalogue, in particular software from the Ubuntu OS SB RAS corporate variant. The catalogue consists of standardized individual pages for each provided program. The individual software page contains following main fields:

- Name
- Abstract
- Advantages and lacks description
- Analogues in Microsoft Windows family OS
- Link to the homepage
- Distributions for various platforms or source code
- Link to Ubuntu OS SB RAS corporate variant including the software
- Link to repository page containing the software
- Link to demonstration server running the software
- The most complete user documentation

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- Useful references (tutorials, etc.)
- Support (discussion and user support topic on forum)
- Feedback

On the SB RAS FAP site the catalogue is displayed in index form with search. Regular system users can only view the demonstration pages catalogue. It is created the special user role «Institute representatives» for catalogue pages add/edit on the site.

At the first stage selected samples system-wide free software for Linux OS and also the Siberian Branch institutes recommended free software are added in the catalogue. Further inclusion free software for Microsoft Windows family OS in the catalogue is planned.

Free software "advertisement" is organized on the Foundation site on a regular rotation (just as Fedora Daily Package [6], Debian Package of the Day, Freshmeat, etc.).

III. THE DEMONSTRATION SERVER

The demonstration server is the dedicated server preloaded with the Ubuntu OS SB RAS corporate variant and free software set. The creation purpose is free software, developed in the SB RAS institutions, and third-party free software demonstration by its run on the dedicated server with restricted access for authorized users. Thus users not only can see the free software description, receive all necessary documentation and distribution, but also to estimate its real work needlessly in its previous installation on their own computers. The variant of free software Web-interfaces creation or other representation technologies use is possible in the future.

Free access to the server was planned to maximize the number of users while developing this service. And also its run in a virtualized environment task was put to simplification its recovery after software or hardware failures. The virtualization technologies selection criteria for its use on the demonstration platform were:

- Support Linux OS and Microsoft Windows family OS as "guest" (used for demonstration) operational systems.
- Easy server connection for users: ideally, using its OS standard tools, or (in case of impossibility) with client loading and minimum adjustments.
- The virtualization technology freeness.

The FreeBSD Jail, OpenVz, VirtualBox, KVM, Xen have been tested as the virtualization technologies. The VirtualBox, the only means satisfying all the above criteria, showed insufficient work through network performance. The remaining technologies do not satisfy at least one of the above criteria. The decision to refuse from virtualization at the first stage and directly hardware server use for demonstration with authorized users' access organization was as a result accepted. Install on the server additional free software and perform other administrative settings the accredited users can only, the rest have only minimum necessary permissions set for work with preinstalled free software.

Access to the server is carried out by RDP, VNC, NX protocols. Windows systems have the regular RDP client, OS installation part by default - «Remote desktop connection». The VNC and NX protocols have some free clients variants for all OS.

Following major scientific and system-wide free software packages passed approbation and installed on the demonstration server by the current moment:

- **Mathematical free software**: the computer algebra systems Sage, Maxima; the applied mathematical programs package Scilab; the statistical data processing programming language R; the scientific data analysis and visualization software SciDAVis.
- **"Mechanic" subject free software**: the Triangle; the numerical calculations environment Octave; the two- and three-dimensional graphs creation software gnuplot.
- **System-wide free software**: the office suite OpenOffice.org; the PDF viewer Adobe Reader; the DjVu viewer Evince; the raster graphics editor GIMP; the vector graphics editor Inkscape; the browsers Mozilla Firefox, Chromium, Opera; the FTP-clients FileZilla, gFTP; the terminal client tsclient; the remote desktops access Vinagre; the images browser Picasa; the audio player Audacious; the video players Rhythmbox, VLC; the file managers GNOME Commander, Midnight Commander.

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The free software demonstration platform basic architectural components are defined at the moment; the found decisions approbation is making. It is planned to finish working out of the platform and to bring it into full operation before the year. Its further development the most obvious following directions are:

- The platform work organization not on real, but on dedicated virtual servers (will give an opportunity to several OS and software for them simultaneous demonstration organize).
- Platform expansion by Ubuntu OS new versions as they are released.
- Free software set for the Ubuntu OS expansion both on the server and in the catalogue.
- Platform expansion by Microsoft Windows family operating systems and a free software set for them (it is necessary to clarify licensing issues).

The demonstration platform will be integrated into the single software complex with the other services that already exist on the SB RAS FAP site. These services centralized usage in the Siberian Branch for free software development and promotion will allow avoiding additional costs for software and hardware maintenance in each the SB RAS individual organization.

REFERENCES

[1] Komissarov D. “Russian Software Platform: Ecosystem formation possible ways”, http://www.gosbook.ru/node/668 (in Russian)

[2] The Siberian Branch of the Russian Academy of Science Foundation of Algorithms and Programs, http://fap.sbras.ru

[3] Zybarev Yu.M. “About the SB RAS program resources development”, Proceedings of the XVII Scientifically-methodical Conference «Telematika’2010». Volume 1. Section A. – St Petersburg, 2010. - P. 142. (in Russian)

[4] Kuz'min O. “Microsoft opened Unified Communications Demonstration Center”, http://www.interface.ru/home.asp? artId=16431 (in Russian)

[5] “Free software demonstration platform creation”, http://open-life.org/blog/audience/254.html (in Russian)

[6] Fedora Daily Package, http://dailypackage.fedorabook.com