Lab – FOSSology

Lab Contents
This lab purpose is to install and use FOSSology to analyze licenses included in software components.

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Table of content

Objectives .................................................................................................................................................... 2
Reference documents .................................................................................................................................. 3
Environment setup ..................................................................................................................................... 3
  FOSSology installation .......................................................................................................................... 3
  FOSSology setup ................................................................................................................................... 5
FOSSology first steps ................................................................................................................................ 7
  Login ....................................................................................................................................................... 7
  Getting help and information ............................................................................................................... 8
  Uploading a file for analysis ............................................................................................................... 9
  Browsing licenses ................................................................................................................................ 11
Deep dive in FOSSology ............................................................................................................................ 13
  Comparing software ............................................................................................................................. 13
  Using CLI to deal with FOSSology ....................................................................................................... 15

Index des illustrations
Illustration 1: FOSSology welcome page ...................................................................................................... 7
Illustration 2: FOSSolgy login page .............................................................................................................. 7
Illustration 3: FOSSology welcome page once logged in ........................................................................... 8
Illustration 4: Getting Started page ........................................................................................................... 8
Illustration 5: Viewing Licenses list .......................................................................................................... 9
Illustration 6: Folder creation ..................................................................................................................... 10
Illustration 7: Upload from URL ............................................................................................................... 10
Illustration 8: Upload scheduled ............................................................................................................... 11
Illustration 9: Job progress ...................................................................................................................... 11
Illustration 10: Browsing the result .......................................................................................................... 12
Illustration 11: License analysis ............................................................................................................... 12
Illustration 12: Comparing 2 versions ....................................................................................................... 13
Illustration 13: Difference in comparison ................................................................................................ 15
Overview of the FOSSology Lab

Objectives

At the end of the Lab students should be able to install FOSSology, use it to upload a full software stack and analyze its licenses.

Expected duration: 60 minutes
Reference documents

When dealing with the installation and configuration of FOSSology, the first approach is to look at some reference documents:

The User and Sysadmin Key Documentation and Installation and Package structure notes at http://www.fossology.org/projects/fossology/wiki as well as man pages

The Wiki at http://www.fossology.org/projects/fossology/wiki contains many other useful docs to understand the project.

Most of the documentation is provided currently under a wiki format, so contributors are welcome and expected, including those finding issues in that training material, available as an OpenDocument Format text.

Reach project members at http://www.fossology.org/projects/fossology/wiki/Contact_Us. The general mailing-list dealing with FOSSology is available at http://lists.fossology.org/pipermail/fossology/ and forums are also available at http://www.fossology.org/projects/fossology/boards

Estimated time for the lab is placed in front of each part.

Environment setup

Estimated time: 10 minutes

FOSSology installation

On the VM used for this Lab, an operational FOSSology instance has already been installed in order to ease this part that you then can skip. For those of you interested by the installation and initial setup phase, please continue to read this section. You'll first have to remove all fossology packages installed by doing

FOSSology's source code is available externally from http://www.fossology.org/projects/fossology/wiki/Download. But instead of starting from code, I much recommend using packages (which are produced with my own project-builder.org tool ;-) available at http://www.fossology.org/releases/

Version 2.1.1 is the current stable release. Packages are also available for various Linux distributions.

As the Lab has been prepared on a Debian 6 system, I recommend that you use apt to do the installation. For that, please read the specific documentation available at http://www.fossology.org/projects/fossology/wiki/Debian_Install_2_1.

You may also find that reading useful: http://www.antelink.com/blog/how-install-your-own-fossology-instance.html

In short, what you have to do is to adapt your apt configuration to point to the FOSSology repository in addition to the one you have.

So add the reference to the FOSSology repository to your /etc/apt/sources.list file:

```
# cat >> /etc/apt/sources.list << EOF
```
deb http://fossology.org/releases/2.1.1/Debian 6.0 contrib

EOF

Then use apt to install the application with all its dependencies and check that the correct version is installed and operational:

```
# apt-get clean
# apt-get update

Get:1 http://security.debian.org squeeze/releases/updates Release.gpg [836 B]
[...]
Fetched 11.8 MB in 26s (442 kB/s)
Reading package lists... Done

# apt-get install fossology

Reading package lists... Done
Building dependency tree
Reading state information... Done

The following extra packages will be installed:

   apache2-mpm-prefork  apache2-utils  apache2.2-bin  apache2.2-common
   cabextract  fossology-agents-single  fossology-common  fossology-db
   fossology-scheduler-single  fossology-web-single  genisoimage  libapache2-
   mod-php5  libapr1  libaprutil1  libaprutil1-dbd-sqlite3  libaprutil1-ldap
   libelf1  libewf1  libextractor-plugins  libextractor1c2a  libfllac8  liblua5.1-0
   libmp3lame2  libnspr4-0d  libnss3-1d  libogg0  libonig2  libopenjpeg2
   libpoppler5  libpq5  libqdbm14  librpm1  librpmio1  libtsk3-3
   libuc11  libvorbis0a  libvorbisfile3  php-pear  php5-cli  php5-common
   php5-pgsql  php5-suhosin  poppler-utils  postgresql-8.4
   postgresql-client-8.4  postgresql-client-common
   postgresql-common  rpm  rpm-common  rpm2cpio
   sleuthkit  ssl-cert  unrar-free  upx-ucl

Suggested packages:

   apache2-doc  apache2-suexec  apache2-suexec-custom  wodim  cdrkit-doc
   libextractor-java  python-extractor  php5-dev  oidentd  ident-server
   postgresql-doc-8.4  alien  elfutils  rpm-1.18n  openssl-blacklist  pike

The following NEW packages will be installed:

   apache2-mpm-prefork  apache2-utils  apache2.2-bin  apache2.2-common
   cabextract  fossology-agents-single  fossology-common  fossology-db
   fossology-scheduler-single  fossology-web-single  genisoimage  libapache2-
   mod-php5  libapr1  libaprutil1  libaprutil1-dbd-sqlite3  libaprutil1-ldap
   libelf1  libewf1  libextractor-plugins  libextractor1c2a  libfllac8  liblua5.1-0
   libmp3lame2  libnspr4-0d  libnss3-1d  libogg0  libonig2  libopenjpeg2
   libpoppler5  libpq5  libqdbm14  librpm1  librpmio1  libtsk3-3

```

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libucl1  libvorbis0a  libvorbisfile3  php-pear  php5-cli  php5-common  php5-pgsql  php5-suhosin  poppler-utils  postgresql-8.4  postgresql-client-8.4  postgresql-client-common  postgresql-common  rpm  rpm-common  rpm2cpio  sleuthkit  ssl-cert  unrar-free  upx-ucl

0 upgraded, 56 newly installed, 0 to remove and 23 not upgraded.

Need to get 35.3 MB of archives.

After this operation, 87.5 MB of additional disk space will be used.

Do you want to continue [Y/n]? y

WARNING: The following packages cannot be authenticated!

fossology-common  fossology-db  fossology-web  fossology-scheduler  fossology-ununpack  fossology-copyright  fossology-namos  fossology-pkgagent  fossology-buckets  fossology-mimetype  fossology-delagent  fossology-wgetagent  fossology

Install these packages without verification [y/N]? y

Get:1  http://ftp.fr.debian.org/debian/ squeeze/main  libapr1  amd64  1.4.2-6+squeeze4  [94.1 kB]

[...]

Setting up fossology (2.1.1-1) ...

Database connectivity is good.

FOSSology postinstall complete, but sure to complete the remaining
steps in the INSTALL instructions.

Starting FOSSology job scheduler: fossology.

# ps auxww | grep fosso

  fossy  3860  0.0  0.4 121432   4232 ?    Ssl  14:59   0:00 /usr/share/fossology/scheduler/agent/fo_scheduler  --daemon  --reset  --verbose=1
  postgres  3861  0.0  0.9 107420   9572 ?    Ss   14:59   0:00 postgres: fossy fossology 127.0.0.1(35105) idle
  root    3898  0.0  0.0   7544   820 pts/0   S+   15:02   0:00 grep fosso

**FOSSology setup**

Then you'll have to perform the post installation phase as described at
http://fossology.svn.sourceforge.net/viewvc/fossology/tags/2.1.0/fossology/install/INSTALL

In short, what you have to do is to adapt your kernel, postgresql, PHP and apache configurations.
Adjust the maximum amount of shared memory for your kernel:

```
# cat >> /etc/sysctl.conf << EOF
# For FOSSology
kernel.shmmax=512000000
EOF
# sysctl -p
kernel.shmmax = 512000000
```

Adjust the PostgreSQL configuration:

```
# perl -pi -e "s/#listen_addresses[^=]*=.*/listen_addresses = '*'/" /etc/postgresql/8.4/main/postgresql.conf
# /etc/init.d/postgresql restart
Restarting PostgreSQL 8.4 database server: main.
```

Adjust the PHP configuration:

```
# perl -pi -e "s/max_execution_time[^=]*=.*/max_execution_time = 90/" /etc/php5/apache2/php.ini
# perl -pi -e "s/memory_limit[^=]*=.*/memory_limit = 702M/" /etc/php5/apache2/php.ini
# perl -pi -e "s/post_max_size[^=]*=.*/post_max_size = 701M/" /etc/php5/apache2/php.ini
# perl -pi -e "s/upload_max_filesize[^=]*=.*/upload_max_filesize = 700M/" /etc/php5/apache2/php.ini
# /etc/init.d/apache2 restart
Restarting web server: apache2apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1 for ServerName
```

An apache configuration file is provided as part of the installation and can be found at /etc/apache2/sites-enabled/fossology.conf

Pointing a browser to the initial URL (http://localhost/repo/) should give you the welcome page of FOSSology as shown below:
FOSSology first steps

Estimated time: 30 minutes

The goal of this part is to allow you to upload a first code example and analyze its licenses.

Login

You'll first have to log in in order to be able to use FOSSology. By default during installation, an administrative account having all rights is created. Account is fossy with a passwd of fossy. Use the login menu entry on the right hand side to log in.
You now have more menu entries at the top of the page, compared to the Illustration 1

**Getting help and information**

At every time, you can get help through the Help entry of the Web interface and have access to the documentation of the project. You can first have a look at the “getting started” which will give you an overall view of how to use FOSSology. The About menu displays the version of FOSSology and its license. Finally the Documentation menu entry will redirect you to the online documentation available on [http://www.fossoogy.org](http://www.fossoogy.org). Be
warned that you'll access the latest version of the documentation (provided under a wiki format), which may differ from the version of the tool you're using.

If you want to know which are the licenses handled by FOSSology, you can use the “Admin” menu and its “License Admin” entry. You can filter by family name if you're looking for a specific one.

### Illustration 5: Viewing Licenses list

#### Uploading a file for analysis

You'll now upload a first file to launch an analysis by FOSSology on it and detect which licenses are discovered.

We'll start by creating a folder to host our files. In the “Organize” menu, use the “Folder” sub-menu and the “Create” entry to make one.
Now we're ready to upload our first content:

**Illustration 6: Folder creation**

**Illustration 7: Upload from URL**
Feel free to use a reference to a software you know best in order to have the most interesting results. Once selected, click on “Upload!”.

Illustration 8: Upload scheduled

You’ll note that your job is first scheduled, before being performed. The system is multi-user and multi-tasks, and some jobs may be huge (example full DVDs) so the need for a scheduling mechanism.

If the job doesn’t appear to progress, then check that FOSSology is running correctly and restart it if needed

# /etc/init.d/fossology restart

Then look at the progresses of your job:

Illustration 9: Job progress

If the job doesn’t appear to progress, then check that FOSSology is running correctly and restart it if needed

Then look at the progresses of your job:

Browsing licenses

Once all the tasks have been performed, look at the result of the analysis by going into menu “Browse” in the “Envol” Repository where you should find your software detailed.

You can look at the “Info” and “History” entries first to verify that the meta data and job info are correct and then click on the project’s name to drill into the license analysis. Also feel free to look at the upstream documentation for license analysis available at http://www.fossology.org/projects/fossology/wiki/How_to_Find_Analyzed_License_Information.
Illustration 10: Browsing the result

Illustration 11: License analysis
Now explore more the analysis by using the various entries provided by FOSSology.

**Deep dive in FOSSology**

All the following parts are independent and can be performed in the order of your choice. The simplest are given first, the more complex, also requiring more time at the end.

**Comparing software**

Estimated time: 10 minutes

Use the instructions presented earlier in to upload another version of your software, and use the Compare feature of the Browse Menu in order to see the differences between your 2 versions with regards to licenses.

**Illustration 12: Comparing 2 versions**
Illustration 13: Difference in comparison

You can use the View button to check whether this is correct or not, and then use the “Edit” link to modify the License info and fix the issue (if this is an issue). Check also that your modifications allow you to remove the differences shown in the previous “Compare License Browser” screenshot. Explore the trees to get more familiar with the possibilities of comparing 2 uploads as time permits. Look also at the documentation available at http://www.fossology.org/projects/fossology/wiki/Compare-licensediff

Using CLI to deal with FOSSology

Estimated time: 10 minutes

FOSSology provides some commands in order to perform batch processing of license analysis, if that mode is more convenient for you.

First log on as user fossy, and look at the online help of the cp2foss command

```
# su - fossy
fossy@debian:~$ cp2foss --user fossy
```

Usage: cp2foss [options] [archives]

Options:

- `-h` = this help message
- `-v` = enable verbose debugging
--user string = user name
--password string = password
-c string = Specify the directory for the system configuration

FOSSology storage options:
-f path  = folder path for placing files (e.g., -f 'Fedora/ISOs/Disk 1')

You do not need to specify '/System Repository'.
All paths are under '/System Repository'.
-A     = alphabet folders; organize uploads into folder a-c, d-f, etc.
-AA num = specify the number of letters per folder (default: 3);
         implies -A
-n name  = (optional) name for the upload (default: name it after the file)
-e addr = email results to addr
-d desc = (optional) description for the update

FOSSology processing queue options:
-Q       = list all available processing agents
-q       = specify a comma-separated list of agents, or 'all'

NOTE: By default, no analysis agents are queued up.
-T       = TEST. No database or repository updates are performed.
            Test mode enables verbose mode.

FOSSology source options:
archive  = file, directory, or URL to the archive.

If the archive is a URL, then it is retrieved and added.
If the archive is a file, then it is used as the source to add.
If the archive is a directory, then ALL files under it are
         recursively added.
-a     = a single hyphen means the archive list will come from stdin.
-X path = item to exclude when archive is a directory

You can specify more than one -X. For example, to exclude
all svn and cvs directories, include the following before the archive's directory path:

   -X .svn -X .cvs

NOTES:

If you use -n, then -n must be set BEFORE each archive.
If you specify a directory, then -n and -d are ignored.
Multiple archives can be specified after each storage option.

One example, to load a file into one path:

```bash
cp2foss \
   --user USER --password PASSWORD \n   -f path -d 'the file' /tmp/file
```

Depreciated options:

- `-a archive` = (depricated) see `archive`
- `-p path` = (depricated) see `-f`
- `-R` = (depricated and ignored)
- `-w` = (depricated and ignored)
- `-W` = (depricated and ignored)

Then download a project source file and ask FOSSology to analyze it

```bash
$ wget ftp://ftp.mondorescue.org/src/mindi-2.1.3.tar.gz
   => “mindi-2.1.3.tar.gz”
Resolving ftp.mondorescue.org... 213.30.161.23
Connecting to ftp.mondorescue.org|213.30.161.23|:21... connected.
Logging in as anonymous ... Logged in!
  ==> SYST ... done.  ==> PWD ... done.
  ==> TYPE I ... done.  ==> CWD (1) /src ... done.
  ==> SIZE mindi-2.1.3.tar.gz ... 213290
  ==> PASV ... done.  ==> RETR mindi-2.1.3.tar.gz ... done.
Length: 213290 (208K) (unauthoritative)
Then use the Web interface to check that the file has been uploaded correctly. You can then start launching some other analysis on this file as only the minimal has been done.

**Illustration 14: cp2foss result**

This is the preferred method to perform the analysis of a large set of components, and also to integrate a FOSSology analysis into a Forge environment.

### Using Tags

Estimated time: 10 minutes

TBD
Using Buckets

Estimated time: 25 minutes (TBD)

In order to better understand buckets, use the documentation available at http://www.fossology.org/projects/fossology/wiki/Creatin_and_Using_Bucketpools.

There is much more to discover around FOSSology, but I leave that for an update of this document.