

Reprozip- Steps to Follow

Now that you have completed your project, let's package it using Reprozip. Reprozip will help us run the project across different platforms without any hassle for other dependencies.

Here's an elaborative example consisting of steps to follow to use Reprozip & Reprounzip.

Reprozip

- Login to cims server and transfer files from [link](#) to a directory <reprofiles>.
- **cd reprofiles**
- **chmod +x reprozip**
- **chmod +x reprounzip**

In this tutorial we are trying to take an example of a cpp code <test.cpp> which takes 2 parameters namely ipfile and opfile

- **g++ test.cpp**
An "a.out" is created as output
test the code by running **./a.out ipfile.txt opfile.txt**
opfile will be populated with number of words in ipfile.txt
- **./reprozip trace ./a.out ipfile.txt opfile.txt**
run **ls -al**, you should be able to see a file ".reprozip-trace"
If you get any error during this step, run **export LC_ALL=C**
- **./reprozip pack my_repro_file**
- my_repro_file.rpz will be created.
- This is the file you will upload for the project.

To Test if it is correct, you will follow the steps for reprounzip:

Reprounzip

- Lets assume you have the .rpz file in a directory
- **./reprounzip directory setup my_repro_file.rpz ~/unreprofiles**
check if ~/unreprofiles is created
- Check if all files are in <~/unreprofiles/root/home/net-id/>

Reprozip- Steps to Follow (FOR INSTALLATION ON LOCAL SYSTEMS)

Now that you have completed your project, let's package it using Reprozip. Reprozip will help us run the project across different platforms without any hassle for other dependencies.

Here's an elaborate example consisting of steps to follow to use Reprozip & Reprounzip.

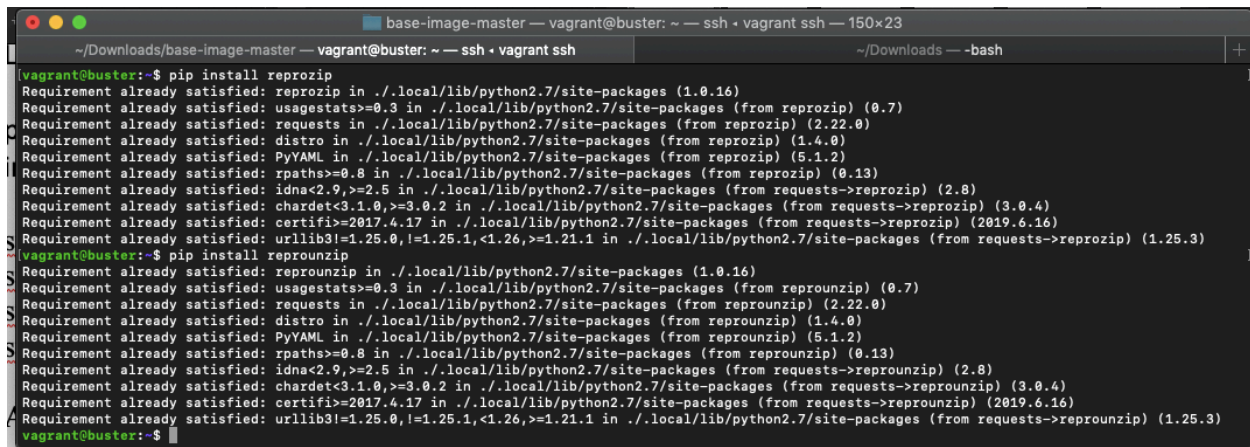
Installing Reprozip

- Login to your Linux environment (Not Mac terminal)
- python & sqlite are the prerequisites for Reprozip, to install them run the following commands in order:

```
sudo apt-get install python-dev
sudo apt-get install python-pip
sudo apt-get install sqlite3
sudo apt-get install libsqlite3-dev
```

- After successfully installing the above, install Reprozip as follows:

```
pip install reprozip
pip install reprounzip
```



```
base-image-master — vagrant@buster: ~ — ssh • vagrant ssh — 150x23
~/Downloads/base-image-master — vagrant@buster: ~ — ssh • vagrant ssh
~/Downloads — bash
(vagrant@buster:~$ pip install reprozip
Requirement already satisfied: reprozip in ./local/lib/python2.7/site-packages (1.0.16)
Requirement already satisfied: usagestats>=0.3 in ./local/lib/python2.7/site-packages (from reprozip) (0.7)
Requirement already satisfied: requests in ./local/lib/python2.7/site-packages (from reprozip) (2.22.0)
Requirement already satisfied: distro in ./local/lib/python2.7/site-packages (from reprozip) (1.4.0)
Requirement already satisfied: PyYAML in ./local/lib/python2.7/site-packages (from reprozip) (5.1.2)
Requirement already satisfied: rpaths>=0.8 in ./local/lib/python2.7/site-packages (from reprozip) (0.13)
Requirement already satisfied: idna<2.9,>=2.5 in ./local/lib/python2.7/site-packages (from requests->reprozip) (2.8)
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in ./local/lib/python2.7/site-packages (from requests->reprozip) (3.0.4)
Requirement already satisfied: certifi<2017.4.17 in ./local/lib/python2.7/site-packages (from requests->reprozip) (2019.6.16)
Requirement already satisfied: urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in ./local/lib/python2.7/site-packages (from requests->reprozip) (1.25.3)
vagrant@buster:~$ pip install reprounzip
Requirement already satisfied: reprounzip in ./local/lib/python2.7/site-packages (1.0.16)
Requirement already satisfied: usagestats>=0.3 in ./local/lib/python2.7/site-packages (from reprounzip) (0.7)
Requirement already satisfied: requests in ./local/lib/python2.7/site-packages (from reprounzip) (2.22.0)
Requirement already satisfied: distro in ./local/lib/python2.7/site-packages (from reprounzip) (1.4.0)
Requirement already satisfied: PyYAML in ./local/lib/python2.7/site-packages (from reprounzip) (5.1.2)
Requirement already satisfied: rpaths>=0.8 in ./local/lib/python2.7/site-packages (from reprounzip) (0.13)
Requirement already satisfied: idna<2.9,>=2.5 in ./local/lib/python2.7/site-packages (from requests->reprounzip) (2.8)
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in ./local/lib/python2.7/site-packages (from requests->reprounzip) (3.0.4)
Requirement already satisfied: certifi<2017.4.17 in ./local/lib/python2.7/site-packages (from requests->reprounzip) (2019.6.16)
Requirement already satisfied: urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in ./local/lib/python2.7/site-packages (from requests->reprounzip) (1.25.3)
vagrant@buster:~$
```

- Bring your executable file (I'm using jar file) to this environment for packaging, you may use scp to transfer the jar from local to linux machine.

```
scp /Users/filepath/fileName.jar : fileName.jar
```

- You would need to have the run time environment for your project on the linux machine, for instance we installed java on linux for this.
- Now, run your jar to test, use:

```
Java -jar filename.jar
```

Using Reprozip

- We'll first trace all the system calls in execution by using Reprozip trace command:

```
reprozip trace java -jar filename.jar Inputfile.txt Outputfile.txt
```

In this example and in our project, we'll feed input from the input text file and get the output printed on the output file.

```
base-image-master — vagrant@buster: ~ — ssh - vagrant ssh — 150x23
~/Downloads/base-image-master — vagrant@buster: ~ — ssh - vagrant ssh
vagrant@buster:~$ ls
ADB.jar  Test1.txt
vagrant@buster:~$ java -jar ADB.jar Test1.txt testOut.txt
Reading from file /home/vagrant/Test1.txt
T1 commits
vagrant@buster:~$ reprozip trace java -jar ADB.jar Test1.txt testOut.txt
Trace directory .reprozip-trace exists
(a)ppend run to the trace, (d)elete it or (s)top? [a/d/s] a
[REPROZIP] 21:58:24.170 WARNING: You can use --overwrite to replace the existing trace (or --continue to append
without prompt)
[REPROZIP] 21:58:24.245 ERROR: error stat()ing /home/vagrant/19788: No such file or directory
Reading from file /home/vagrant/Test1.txt
T1 commits
Configuration file written in .reprozip-trace/config.yml
Edit that file then run the packer -- use 'reprozip pack -h' for help

Uploading usage statistics is currently disabled
Please help us by providing anonymous usage statistics; you can enable this
by running:
    reprozip usage_report --enable
If you do not want to see this message again, you can run:
    reprozip usage_report --disable
Nothing will be uploaded before you opt in.
```

- We'll now pack the file using reprozip

```
reprozip pack packageName
```

```
base-image-master — vagrant@buster: ~ — ssh • vagrant ssh — 150x12
~/Downloads — -bash
vagrant@buster:~$ reprozip pack repro-pack
[REPROZIP] 22:19:02.254 WARNING: Changing output filename to repro-pack.rpz

Uploading usage statistics is currently disabled
Please help us by providing anonymous usage statistics; you can enable this
by running:
    reprozip usage_report --enable
If you do not want to see this message again, you can run:
    reprozip usage_report --disable
Nothing will be uploaded before you opt in.
vagrant@buster:~$ ls
ADB.jar  repro-pack.rpz  Test1.txt
```

- It gives us an .rpz file which we can then mail or scp to other system environments and try unzipping and running. You would need to send me this package file for the final project and I'll do the remaining steps. For Advanced Databases in fall of 2019, Devina Bisen
<db3957@nyu.edu>

Using Reprounzip

- Firstly, upload or send .rpz file from your local linux to other systems. For using remote Courant servers, you may use the following command:

```
scp /filepath /repack.rpz userid@access.cims.nyu.edu:/home/userid/desiredFolder
```

It's your local file address followed by the account on server and the desired destination folder on remote machine.

- Now that you have the file on your server, you would need to perform the following steps to satisfy prerequisites for reprozip.

Module load python-2.7

```
python -c 'import reprozip'
```

```
echo $?
```

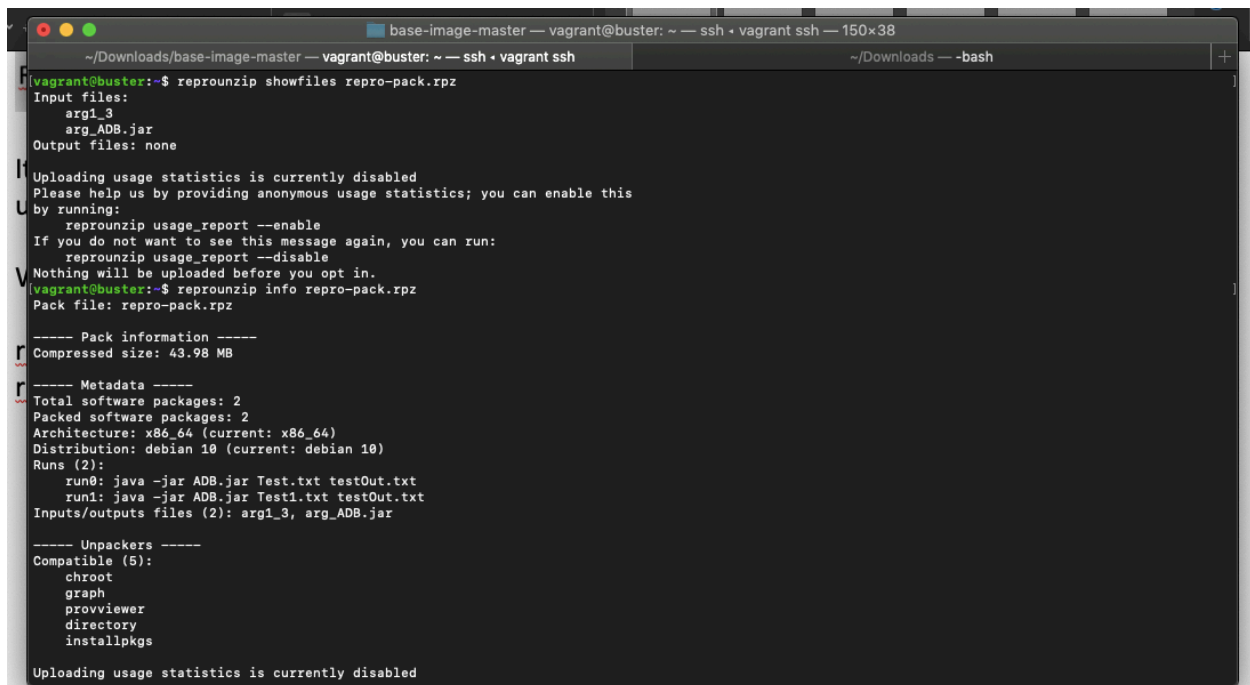
{ Getting 0 in this step is success. }

pip install reprozip

- We first check which files are there in the package and their info, use the following commands to achieve the same:

```
reprozip showfiles pacakageName.rpz
```

```
reprozip info pacakageName.rpz
```

A terminal window titled 'base-image-master' with tabs for 'vagrant@buster: ~', 'ssh - vagrant ssh', and '150x38'. The active tab is 'vagrant@buster: ~'. The terminal shows the following commands and output:

```
vagrant@buster:~$ reprozip showfiles repro-pack.rpz
Input files:
  arg1_3
  arg_ADB.jar
Output files: none

Uploading usage statistics is currently disabled
Please help us by providing anonymous usage statistics; you can enable this
by running:
  reprozip usage_report --enable
If you do not want to see this message again, you can run:
  reprozip usage_report --disable
Nothing will be uploaded before you opt in.
vagrant@buster:~$ reprozip info repro-pack.rpz
Pack file: repro-pack.rpz

---- Pack information ----
Compressed size: 43.98 MB

---- Metadata ----
Total software packages: 2
Packed software packages: 2
Architecture: x86_64 (current: x86_64)
Distribution: debian 10 (current: debian 10)
Runs (2):
  run0: java -jar ADB.jar Test.txt testOut.txt
  run1: java -jar ADB.jar Test1.txt testOut.txt
Inputs/outputs files (2): arg1_3, arg_ADB.jar

---- Unpackers ----
Compatible (5):
  chroot
  graph
  provviewer
  directory
  installpkgs

Uploading usage statistics is currently disabled
```

- If it all looks fine then unzip it in the desired directory location

```
reprozip directory setup repro-pack.rpz ~/yourDesiredDirectoryName
```

```
base-image-master — vagrant@buster: ~ — ssh • vagrant ssh — 166x25
~/Downloads/base-image-master — vagrant@buster: ~ — ssh • vagrant ssh
target      Experiment directory

optional arguments:
-h, --help show this help message and exit
[vagrant@buster:~]$ reprounzip directory setup repro-pack.rpz ~/unzip
[REPROUNZIP] 01:29:38.905 CRITICAL: Target directory exists
[vagrant@buster:~]$ reprounzip directory setup repro-pack.rpz ~/reprounzip

Uploading usage statistics is currently disabled
Please help us by providing anonymous usage statistics; you can enable this
by running:
    reprounzip usage_report --enable
If you do not want to see this message again, you can run:
    reprounzip usage_report --disable
Nothing will be uploaded before you opt in.
[vagrant@buster:~]$ ls
ADB.jar  repro-pack.rpz  reprounzip  Test1.txt  try_reprounzip  unzip
[vagrant@buster:~]$ cd reprounzip
[vagrant@buster:~/reprounzip]$ ls
config.yml  inputs.tar.gz  root
[vagrant@buster:~/reprounzip]$ cd root
[vagrant@buster:~/reprounzip/root]$ ls
etc  home  lib  lib64  tmp  usr
[vagrant@buster:~/reprounzip/root]$ cd ..
[vagrant@buster:~/reprounzip]$ cd ..
```

You can check the files in the new directory inside the root/home folder

- We'll now run the directory by using:

reprounzip directory run ~/ yourDesiredDirectoryName

```
base-image-master — vagrant@buster: ~ — ssh • vagrant ssh — 166x25
~/Downloads/base-image-master — vagrant@buster: ~ — ssh • vagrant ssh
--set-env SET_ENV Environment variable to set (value from the original
                    machine will be ignored; can be passed multiple times)
[vagrant@buster:~]$ reprounzip directory run ~/reprounzip
/sbin/ldconfig: Can't stat /usr/local/lib/x86_64-linux-gnu: No such file or directory
/sbin/ldconfig: Path '/usr/lib/x86_64-linux-gnu' given more than once
/sbin/ldconfig: Path '/lib/x86_64-linux-gnu' given more than once
/sbin/ldconfig: Path '/usr/lib/x86_64-linux-gnu' given more than once
/sbin/ldconfig: Path '/usr/lib' given more than once
/sbin/ldconfig: /lib/x86_64-linux-gnu/ld-2.28.so is the dynamic linker, ignoring

Reading from file /home/vagrant/Test1.txt
T1 commits
Reading from file /home/vagrant/Test1.txt
T1 commits

*** Command finished, status: 0

Uploading usage statistics is currently disabled
Please help us by providing anonymous usage statistics; you can enable this
by running:
    reprounzip usage_report --enable
If you do not want to see this message again, you can run:
    reprounzip usage_report --disable
Nothing will be uploaded before you opt in.
vagrant@buster:~$
```

- You may now check the output, in the command line and output file.
- You can check unzipping and running the package across different platforms.
- Follow all the steps in order and we'd be good to go.

Frequently Asked Questions (FAQs)

Q) Not able to install Reprozip on CIMS.

- You may not be able to do so because of sudo privileges, you might want to use vagrant or any partition on your local computer to create the Linux environment and do so.

Q) Issues with Reprozip.

- Reprozip can be installed on Linux machine using the above instructions. You won't be able to do this on CIMS, if you have to do it there you would need to do it thru conda etc, it won't allow installations of prerequisites otherwise. I would generally use vagrant or a VM to use Linux on mac. You can simply google and download any virtual machine to use Linux.

Q) How to use reprozip trace while using shell script?

- Simply do reprozip trace <script>.sh

Q) Are there examples for using reprozip with python?

- It is pretty much the same as java, use reprozip trace python3 filename.py

Q) We're asked to provide a few test cases. Do we need to do separate zips for each?

- You need to setup a linux environment for reprozip, you may use any machine you wish for that. Later, reprozip could be done in any environment.
- You can zip your py file along with the input.txt containing test cases in one zip file only. There could be multiple input files too, depending on how you are reading them in your code.
- You can make 1 .rpz file with 2 types of runs and in the unzip, call either of the runs.

Q) Issues with pip

To install pip please try:

- sudo apt-get update && sudo apt-get install python-pip

If that still doesn't locate the package for pip:

- sudo apt-get install software-properties-common
- sudo apt-add-repository universe
- sudo apt-get update
- sudo apt-get install python-pip
- You can also try using pip3

Q) Requirements for Reprounzip.

You need to have python installed on the server in order to install reprounzip.

- sudo apt-get install python-pip
- sudo apt-get install python-dev

Q) reprozip command not found" error

- run "sudo apt install reprozip" to fix the "reprozip command not found" error.

Q) Can you send an example of how to run a rpz with command line input.

For example, this is how I run my program:

```
python run.py --testfile test_file_path.txt
```

or

```
python run.py --batchfile batchfile.txt
```

(where batchfile is a text file with paths to multiple test files, which run in a loop).

- If you are creating something like a shell script to run all files, try

- reprozip trace <script>.sh

- reprozip pack <name>.rpz

Port the package to another location and

- reprounzip directory setup <name>.rpz ~/package

- reprounzip directory run ~/package

OR

Try something like this for reprounzip;

```
# setup a rpz run area reprounzip directory setup db.rpz r0
```

```
# run the default case reprounzip directory run r0
```

```
# run a different test case
```

```
# this upload cmds in the localfile 10.txt to r0
```

```
# now it will run with this reprounzip directory upload r0 10.txt:arg reprounzip directory run r0
```