MetWork

METerological frameWORK

An opensource meteorological framework to build our projects of tomorrow

Meteo-France/Fabien MARTY, november 2017

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Technical lead of the Synopsis[1] project

[1] our new operational forecasting workstation

Agenda

What is it ?

Why ?

What is our plan ?

What is it technically ?

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What is it technically ?

It's software

(not servers or services)

It's a framework

So mainly tools, philosophy and (empty) structures

(and not a "deployment ready" product)

It targets developers and sys-admins

(and not end-users)

It **should** be **really free** and **open** (github)

Technically, **it does already exist**

Politically, it's a pre-project with a formal decision at the beginning of next year

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A little bit of history...

We are nearly at the end of the migration to our new "cloud ready" meteorological workstation : Synopsis

The project started in 2010 and it was a huge effort (700 man-months cumulated)

{SYNOPSIS}

Graphical User Interface

Meteorological (web) services

Meteorological framework

"Off the shelf" free softwares

So even if it wasn't completely designed for that, this framework already exists

(inside Synopsis)

And it's already used by other internal projects

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So we want to release MetWork as a real and separately maintained product

Other projects

current version

{SYNOPSIS}

we extract

MetWork

(free)

{Synopsis}

new version

built on

built on

{SYNOPSIS}

current version

Graphical User Interface

Meteorological (web) services

Meteorological framework

"Off the shelf" free softwares

Graphical User Interface

Meteorological (web) services

Meteorological framework

"Off the shelf" free softwares

(our plan, continued)

Continue to fully document the framework in english

Continue to remove remaining technical adherences to Synopsis or to Météo-France

Leave our private github account for a public one

at the beginning of next year

And find new users and contributors !

Because we want to collaborate internally and externally on parts...

... where it's really possible to collaborate **easily**

(like on frameworks)

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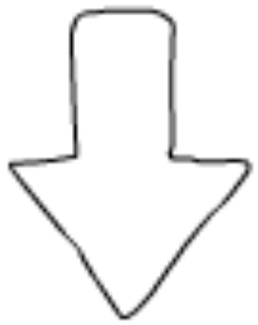
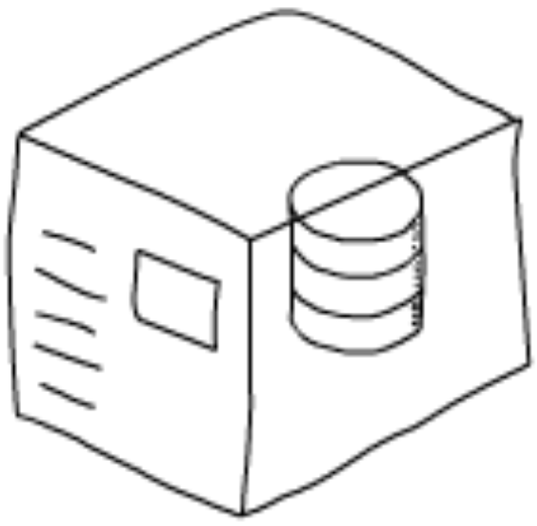
Let's return to ~~home~~ Synopsis

Architecture of Synopsis workstation

Raw datas



FTP



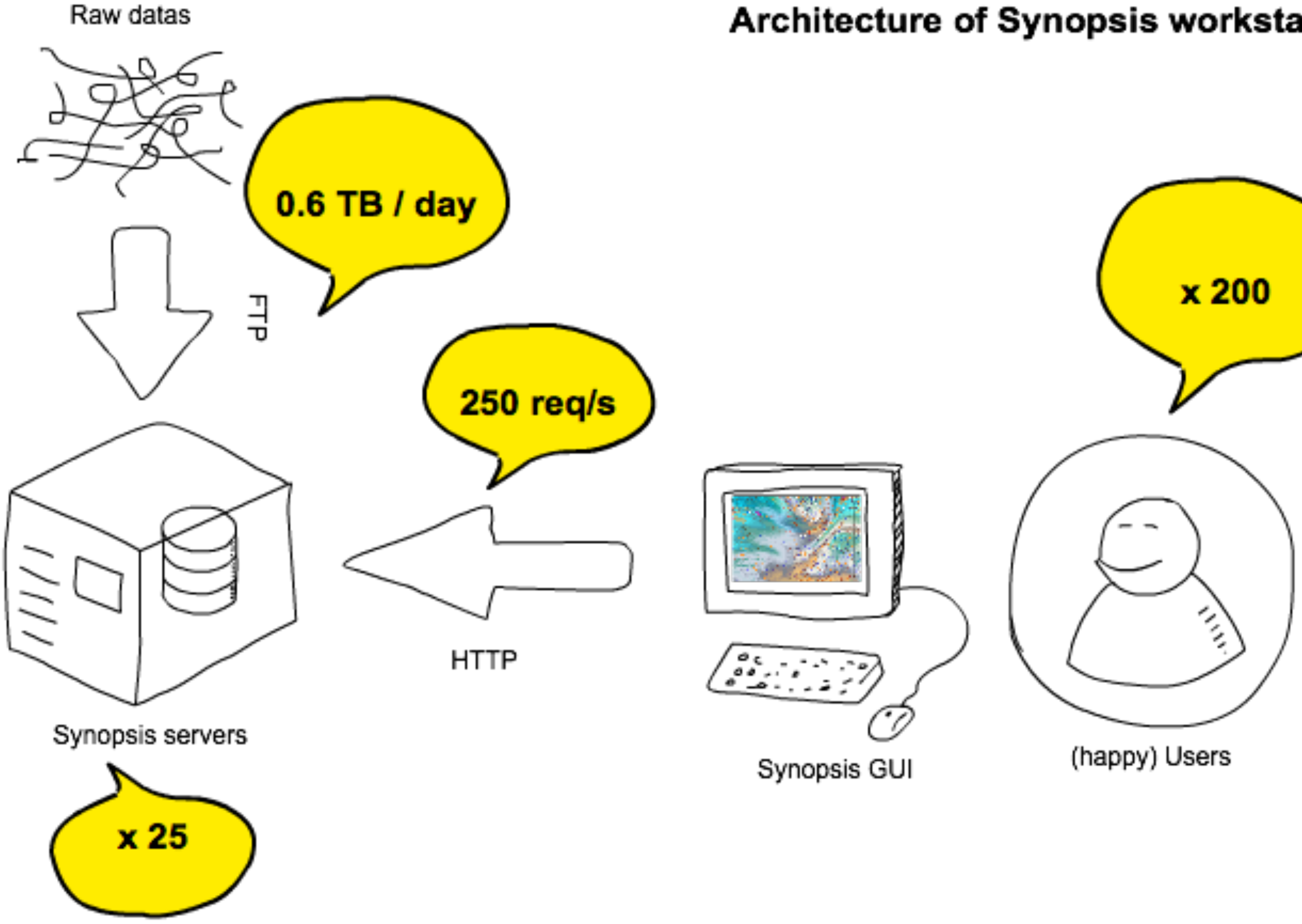
Synopsis servers

HTTP

Synopsis GUI

(happy) Users

Architecture of Synopsis workstation



So MetWork is a modular Python framework with a plugin system for:

- configuring and executing custom actions on incoming files
- storing geospatial and time based datas
- implementing REST microservices (including async routing and priority/QOS system)
- with all "production ready" and "battle tested" batteries included

(of course, you can use only some parts of it if you want)

But MetWork is **NOT** a "ready to use" software

For example, MetWork can't assimilate GRIB datas by itself

(but because all necessary stuff is included, it's easy to write a python plugin to do that in the way you want)

The big MetWork picture to finish

first grade included monitoring system

"lightning fast" communication bus

(incoming) data processing module

data storage module

(web) services module

"http router" module (QOS, rate limiting...)

> 200 free softwares distribution
(including Magics, eccodes, numpy, gdal, postgis, Python2, Python3...)

=> you have to provide your own logic/features as plugins (because MetWork is just a framework)

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Questions ?

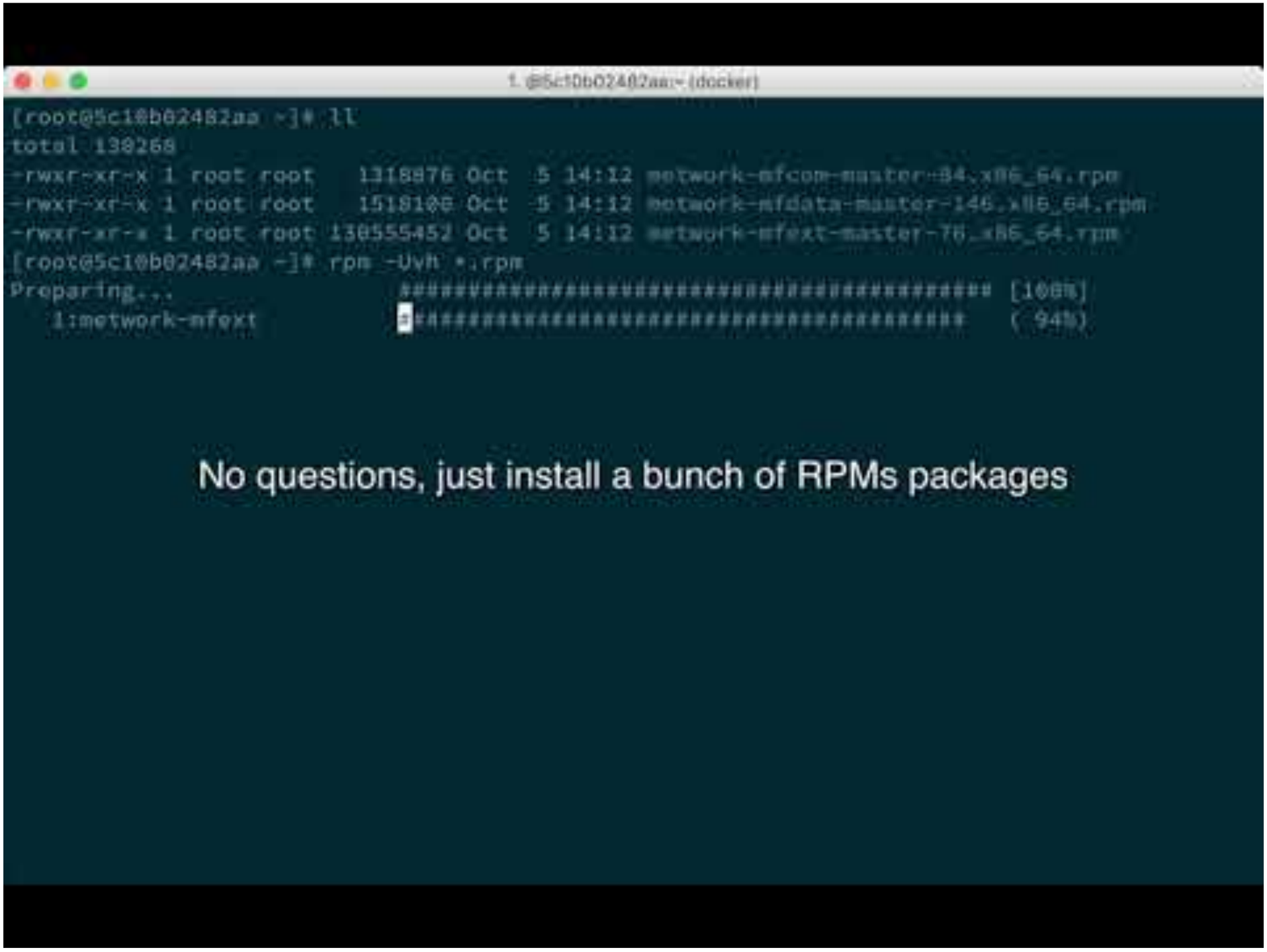
Extra slides: demo

Demo with metwork/data component :

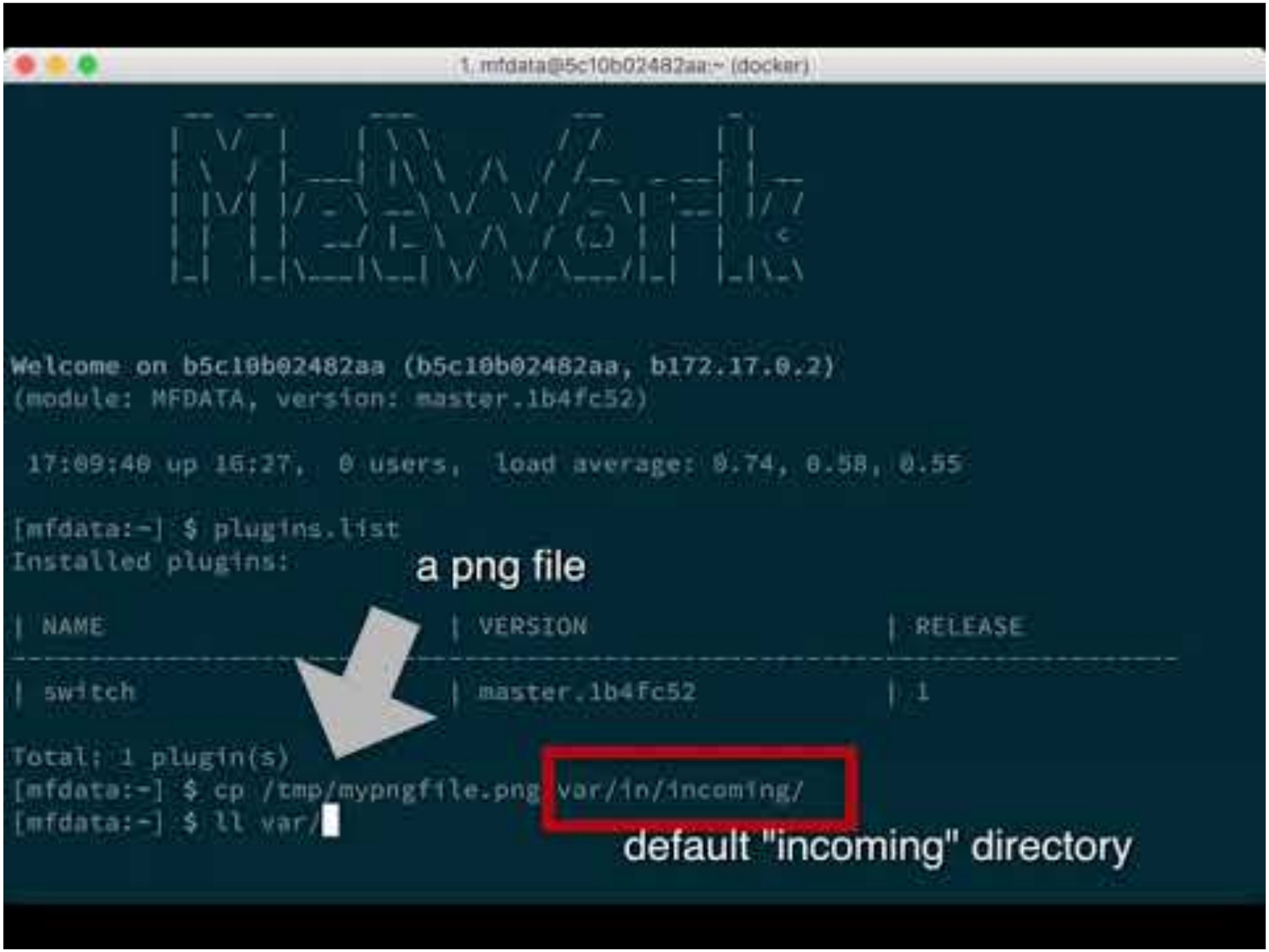
- you receive a lot of files by FTP (some of them are compressed with gzip)
- you have to filter only PNG files
- you have to convert this into JPEG
- and then send these JPEG to another machine by FTP
- **and your work must be "really production ready"**

youtube videos playlist of this demo if following embedded links don't work for you

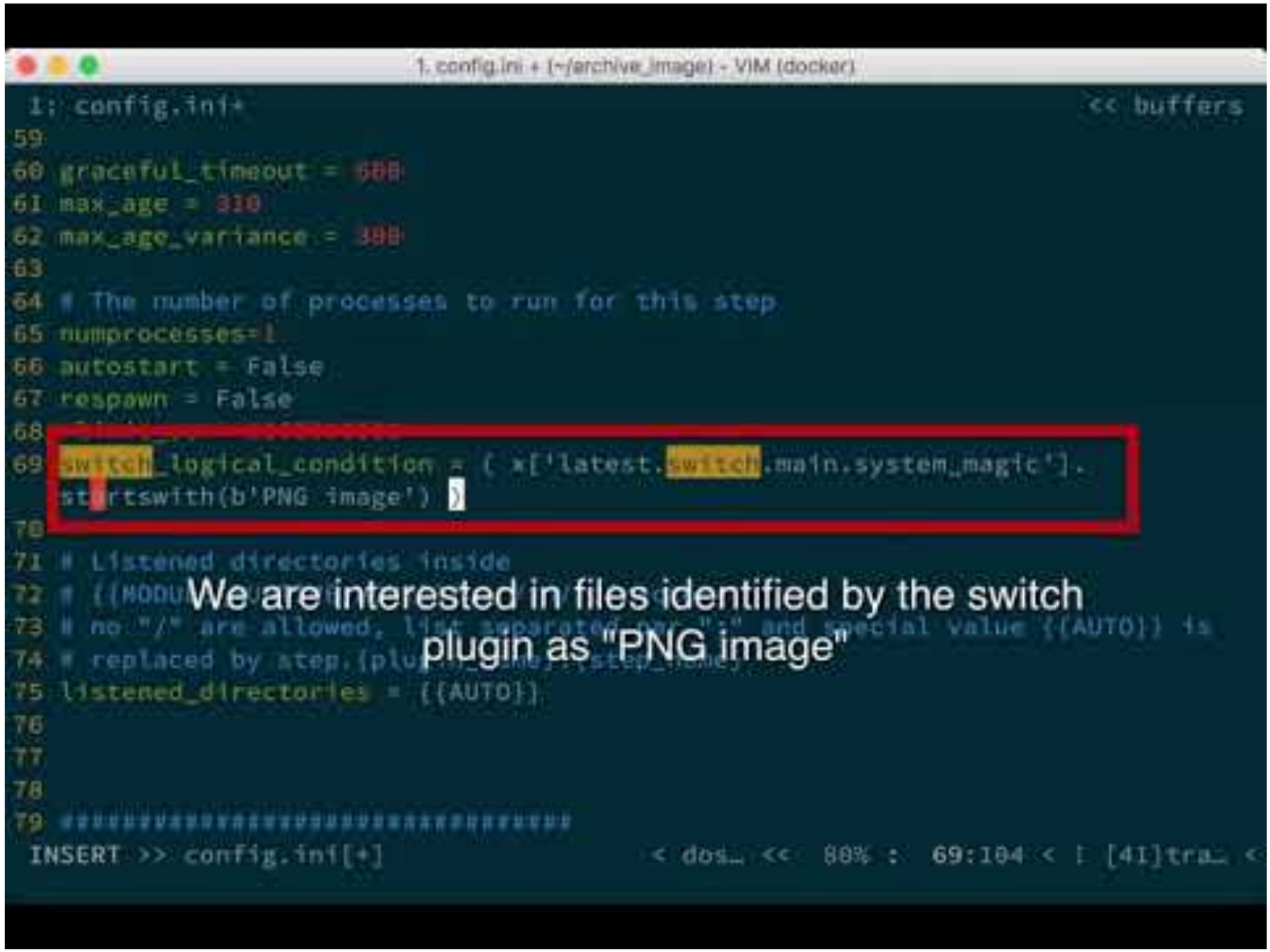
- (1) Metwork installation



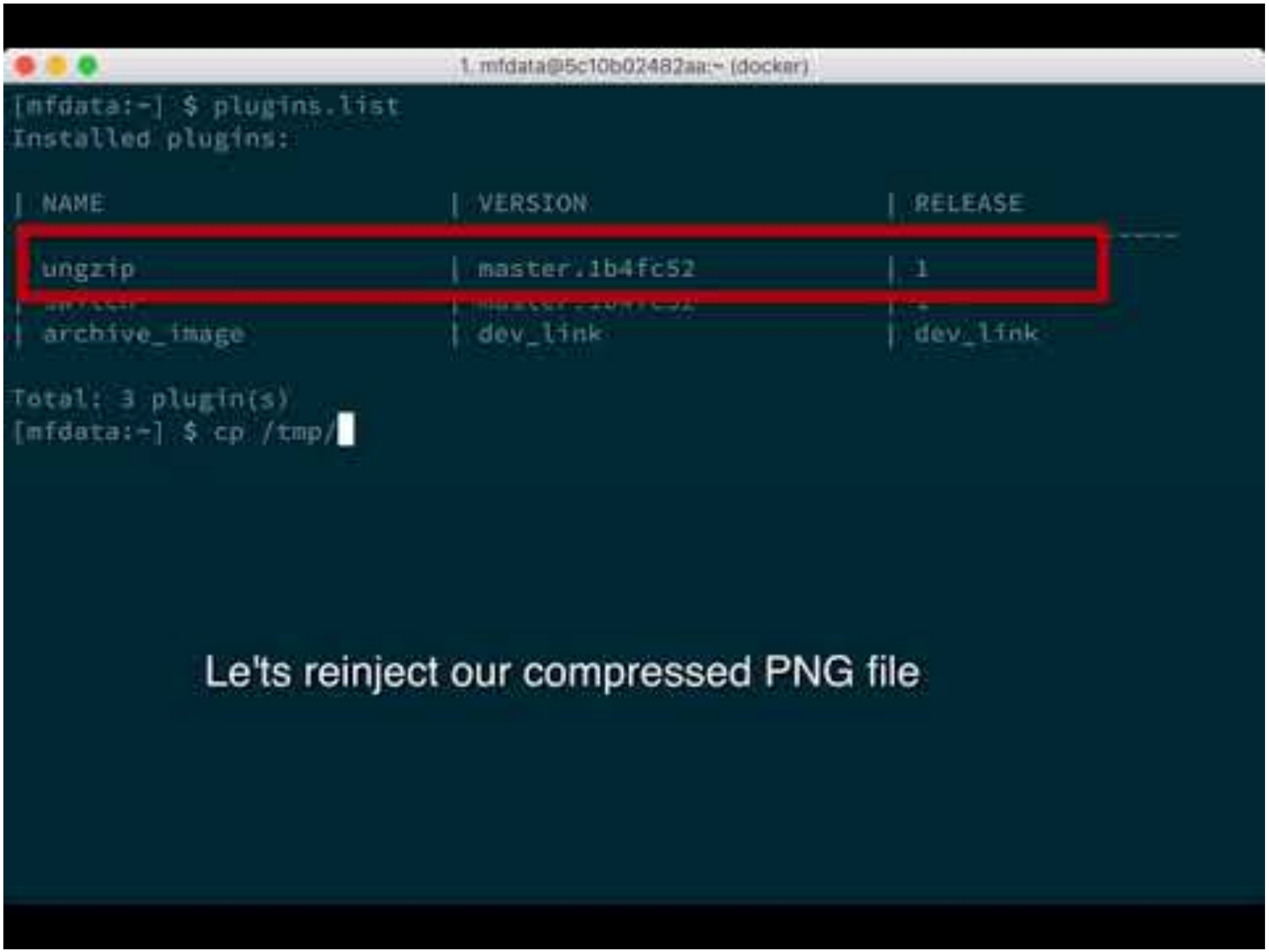
- (2) Just a silly test



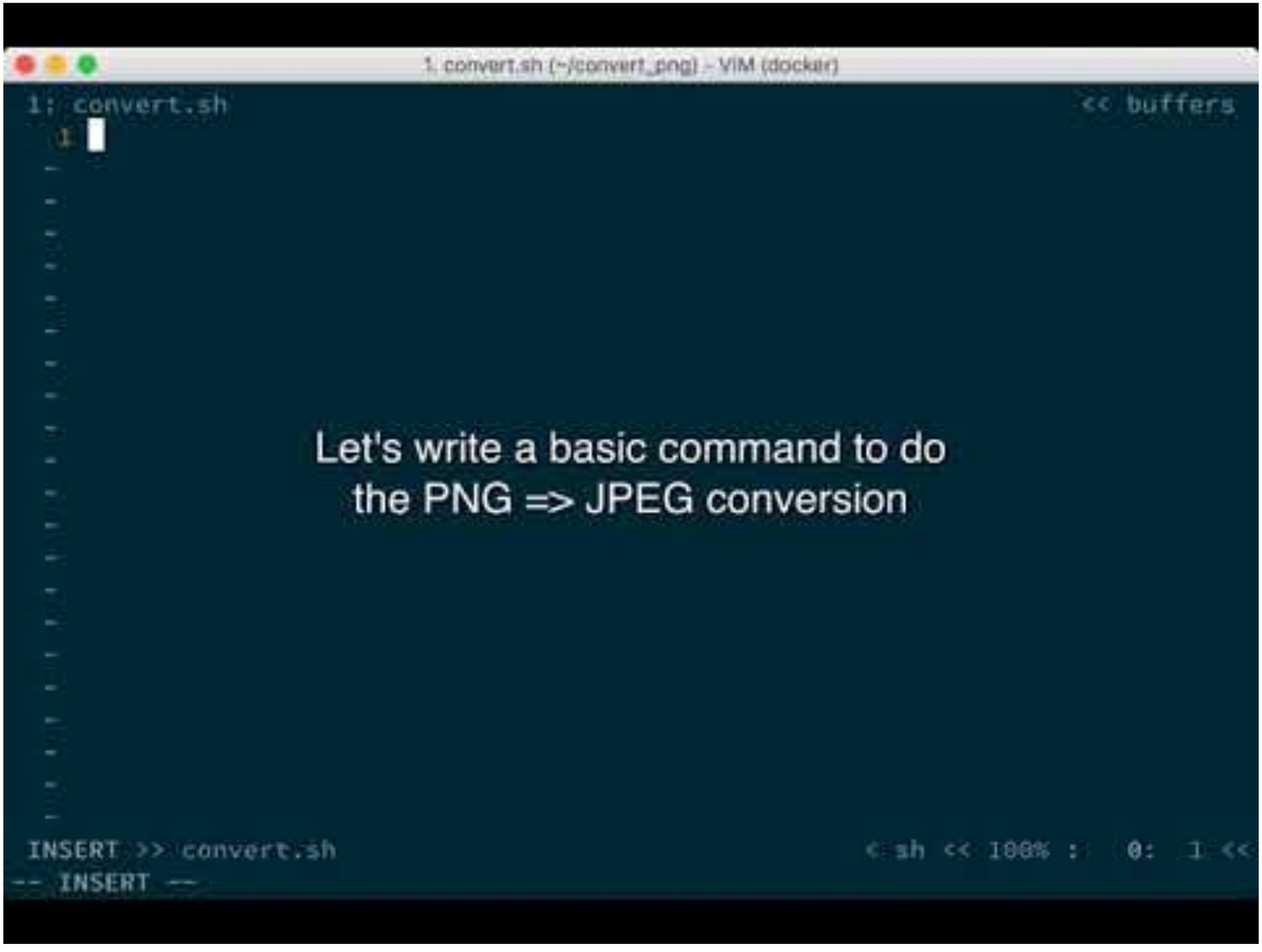
- (3) Our first plugin



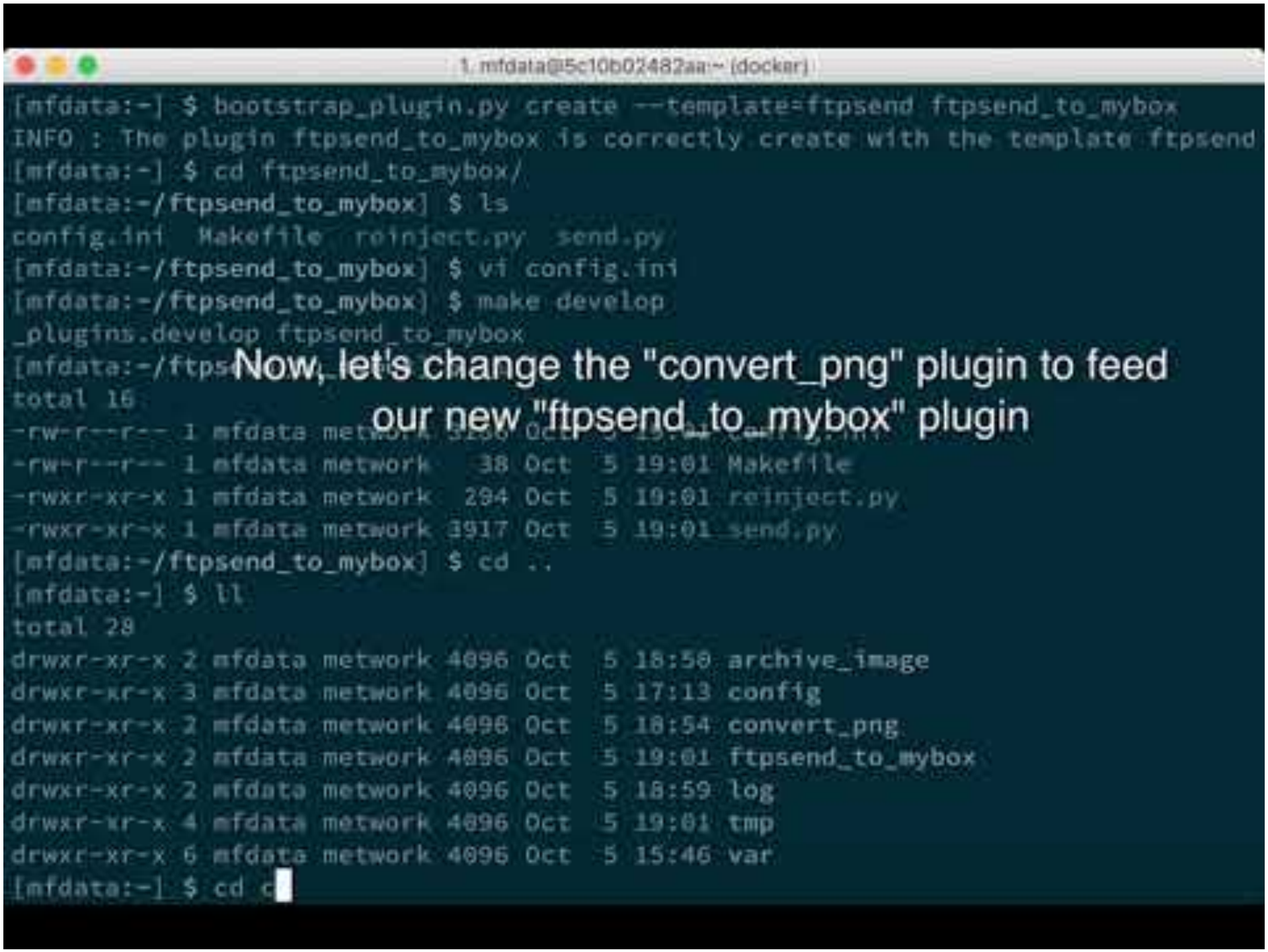
- (4) ungzip plugin



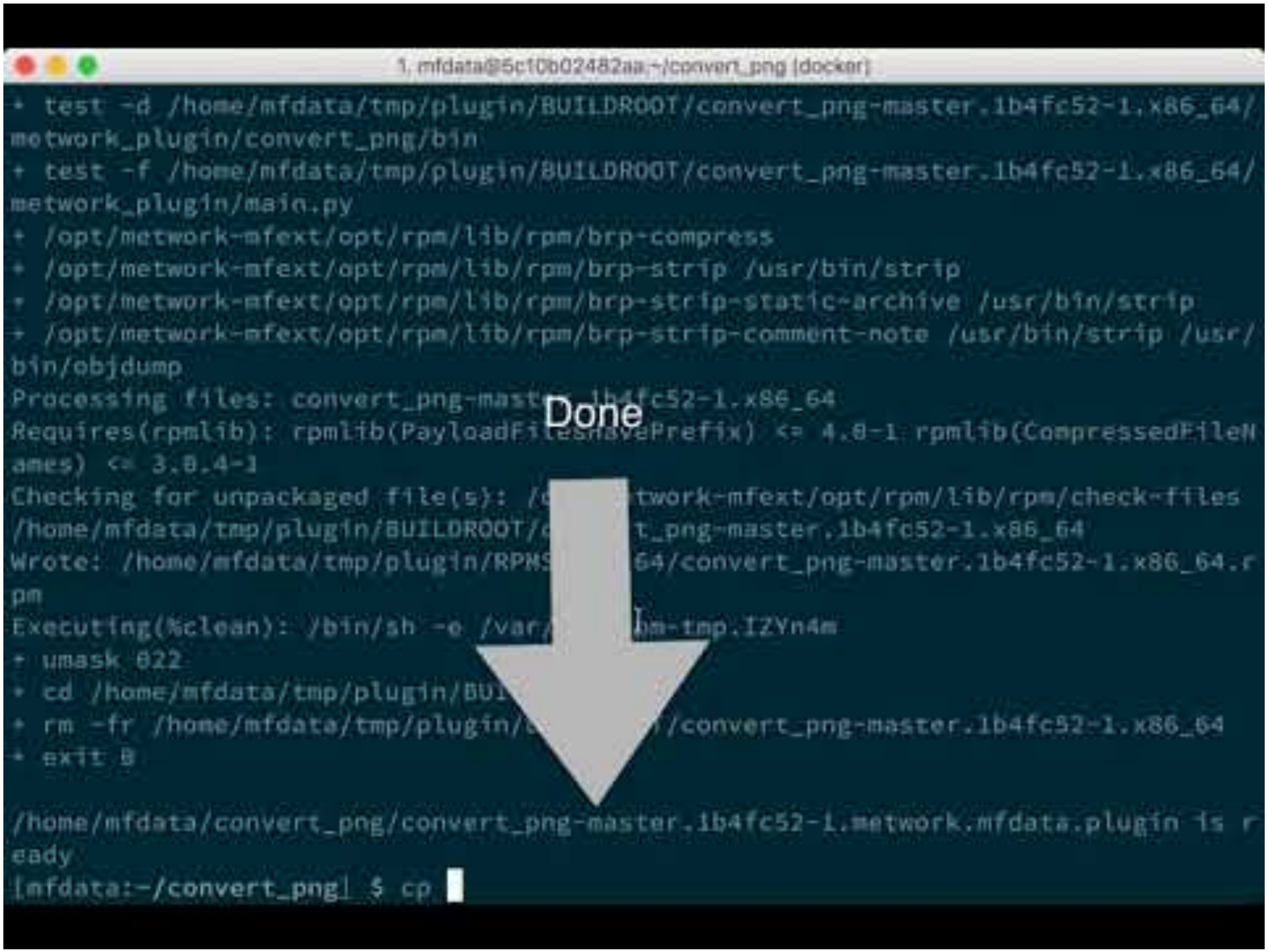
- (5) convert plugin



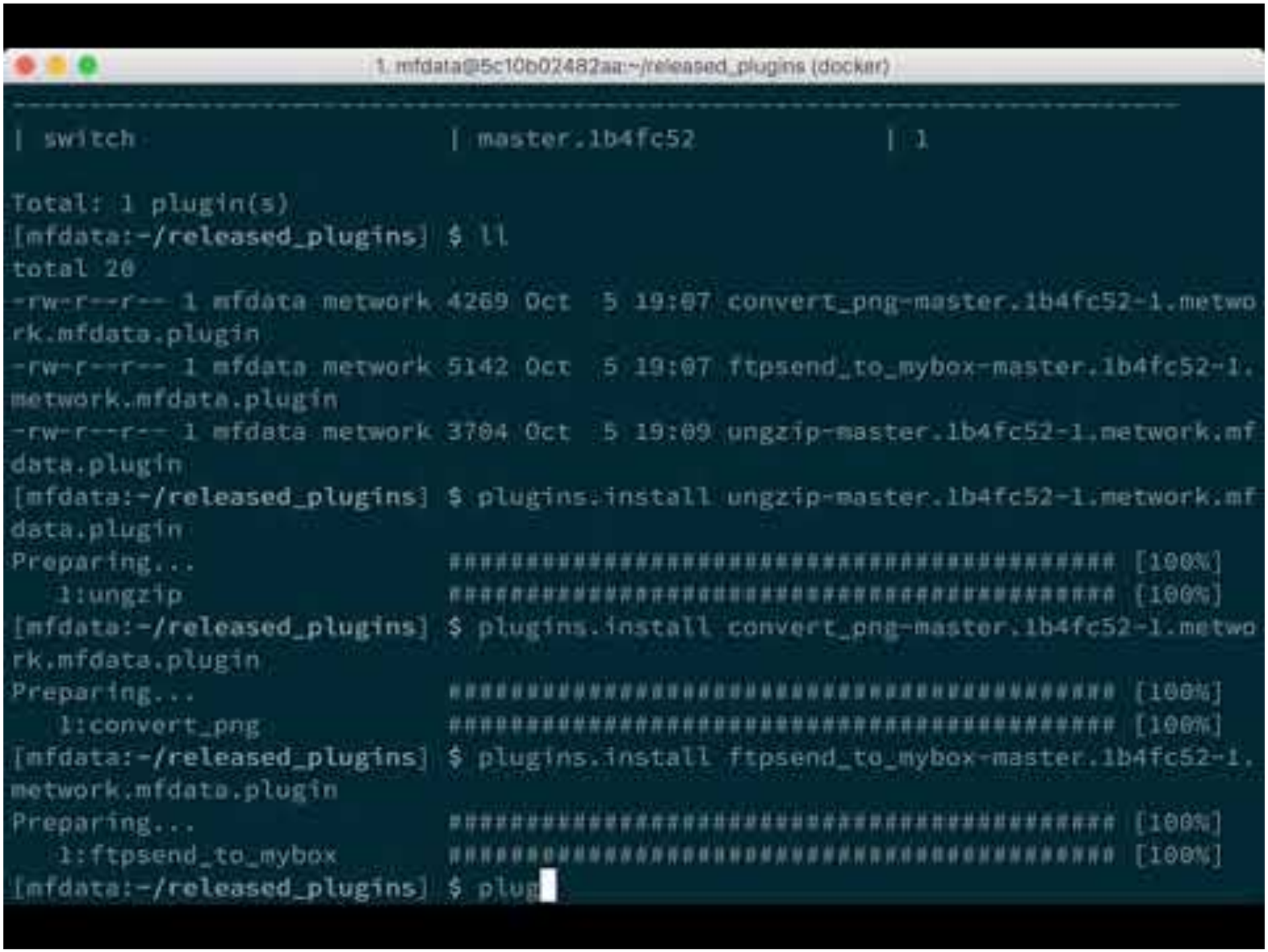
- (6) ftpsend plugin



- (7) release !


1. mfdata@5c10b02482aa:~/convert_png (docker)
+ test -d /home/mfdata/tmp/plugin/BUILDROOT/convert_png-master.1b4fc52-1.x86_64/
metwork_plugin/convert_png/bin
+ test -f /home/mfdata/tmp/plugin/BUILDROOT/convert_png-master.1b4fc52-1.x86_64/
metwork_plugin/main.py
+ /opt/metwork-mfext/opt/rpm/lib/rpm/brp-compress
+ /opt/metwork-mfext/opt/rpm/lib/rpm/brp-strip /usr/bin/strip
+ /opt/metwork-mfext/opt/rpm/lib/rpm/brp-strip-static-archive /usr/bin/strip
+ /opt/metwork-mfext/opt/rpm/lib/rpm/brp-strip-comment-note /usr/bin/strip /usr/
bin/objdump
Processing files: convert_png-master.1b4fc52-1.x86_64
Requires(rpmlib): rpmlib(PayloadFilesHavePrefix) <= 4.0-1 rpmlib(CompressedFileN
ames) <= 3.0.4-1
Checking for unpackaged file(s): /
/home/mfdata/tmp/plugin/BUILDROOT/
Wrote: /home/mfdata/tmp/plugin/RPM
pm
Executing(%clean): /bin/sh -e /var/
+ umask 022
+ cd /home/mfdata/tmp/plugin/BU
+ rm -fr /home/mfdata/tmp/plugin/
+ exit 0
/home/mfdata/convert_png/convert_png-master.1b4fc52-1.metwork.mfdata.plugin is r
eady
[mfdata:~/convert_png] $ cp
Done

- (8) deploy !


1. mfdata@5c10b02482aa:~/released_plugins (docker)
| switch | master.1b4fc52 | 1
Total: 1 plugin(s)
[mfdata:~/released_plugins] $ ll
total 20
-rw-r--r-- 1 mfdata network 4269 Oct 5 19:07 convert_png-master.1b4fc52-1.network.mfdata.plugin
-rw-r--r-- 1 mfdata network 5142 Oct 5 19:07 ftpsend_to_mybox-master.1b4fc52-1.network.mfdata.plugin
-rw-r--r-- 1 mfdata network 3704 Oct 5 19:09 ungzip-master.1b4fc52-1.network.mfdata.plugin
[mfdata:~/released_plugins] $ plugins.install ungzip-master.1b4fc52-1.network.mfdata.plugin
Preparing... ########## [100%]
1:ungzip ########## [100%]
[mfdata:~/released_plugins] $ plugins.install convert_png-master.1b4fc52-1.network.mfdata.plugin
Preparing... ########## [100%]
1:convert_png ########## [100%]
[mfdata:~/released_plugins] $ plugins.install ftpsend_to_mybox-master.1b4fc52-1.network.mfdata.plugin
Preparing... ########## [100%]
1:ftpsend_to_mybox ########## [100%]
[mfdata:~/released_plugins] $ plug