How to Download and Install

For all the command line instruction, they are all in red.

The credential for cuckoo user on this server is "cuckoo:gatech6727"

Follow these two videos and blogs
- https://www.youtube.com/watch?v=QlQS4gk_IFU
- https://www.youtube.com/watch?v=FsF56772ZvU
- https://hatching.io/blog/cuckoo-sandbox-setup/

Use python 2.7 to install because python 3 is not supported.

Create Virtual Environment

Change to cuckoo user and create a virtual environment. By activating the virtual environment, the packages installed by cuckoo is not going to affect the whole system.

```
sudo su cuckoo
virtualenv ~/cuckoo
. ~/cuckoo/bin/activate
```

All dependency packages are mentioned in the links above, including Windows ISO file, VirtualBox, and VMCloak.

For MongoDB, follow this link to install
- https://www.cloudbooklet.com/how-to-install-mongodb-on-ubuntu-22-04/

To install Distorm3, run `python2 -m pip install distorm3==3.4.2`

Create VM (automatically)

This information can also be found in the blog https://hatching.io/blog/cuckoo-sandbox-setup/

Setup Windows VM, it will use the ISO mounted eariler. The path it will try is /mnt/win7 and /mnt/win7x64 for win7

For this command, it initializes a x86-64 Windows 7 VM with 2 CPUs and 2048 MB RAM
```
vmcloak init --verbose --win7x64 win7x64base --cpus 2 --ramsize 2048
```

Clone

This step is optional.

Clone the VM win7x64base into win7x64cuckoo, so that whatever changed to win7x64cuckoo won't affect win7x64base.
```
vmcloak clone win7x64base win7x64cuckoo
```

Snapshots

Create 4 snapshots, the IP address of the VM starts from 192.168.56.101 (101~104)
```
vmcloak snapshot --count 4 win7x64cuckoo 192.168.56.101
```

When creating snapshots, we may get errors “VBoxManage: error: Cannot change type for medium '/home/cuckoo/.vmcloak/image/win7x64cuckoo.vdi': the media type 'MultiAttach' can only be used on media registered with a machine that was created with VirtualBox 4.0 or later”

Use Chapter 6.1 from https://t0xicity.com/blog/cuckoo_sandbox/ to solve this issue.

List VMs

It shows up all the VMs that have already been created.
vmcloak list vms

How to Configure

Initialize

cuckoo init

The working directory will be “$USERHOME/.cuckoo”, set up automatically.

Update Cuckoo Signatures

cuckoo community

Specify VirtualBox to GUI mode (optional, it will not show up if you’re using X11)

$USERHOME/.cuckoo/conf/virtualbox.conf
mode = gui

```
[virtualbox]
# Specify which VirtualBox mode you want to run your machines on.
# Can be "gui" or "headless". Please refer to VirtualBox's official
# documentation to understand the differences.
mode = headless
```

Add VMs to VirtualBox

It will read all the VMs using vmcloak add their information into configurations.
while read -r vm ip; do cuckoo machine --add $vm $ip; done < <(vmcloak list vms)

The result will show in “$USERHOME/.cuckoo/conf/virtualbox.conf”

Network Configuration

sudo sysctl -w net.ipv4.conf.vboxnet0.forwarding=1
sudo sysctl -w net.ipv4.conf.eth0.forwarding=1 (eth0 should be replace with your internet interface, you can find that with ifconfig. eno1 in my case)

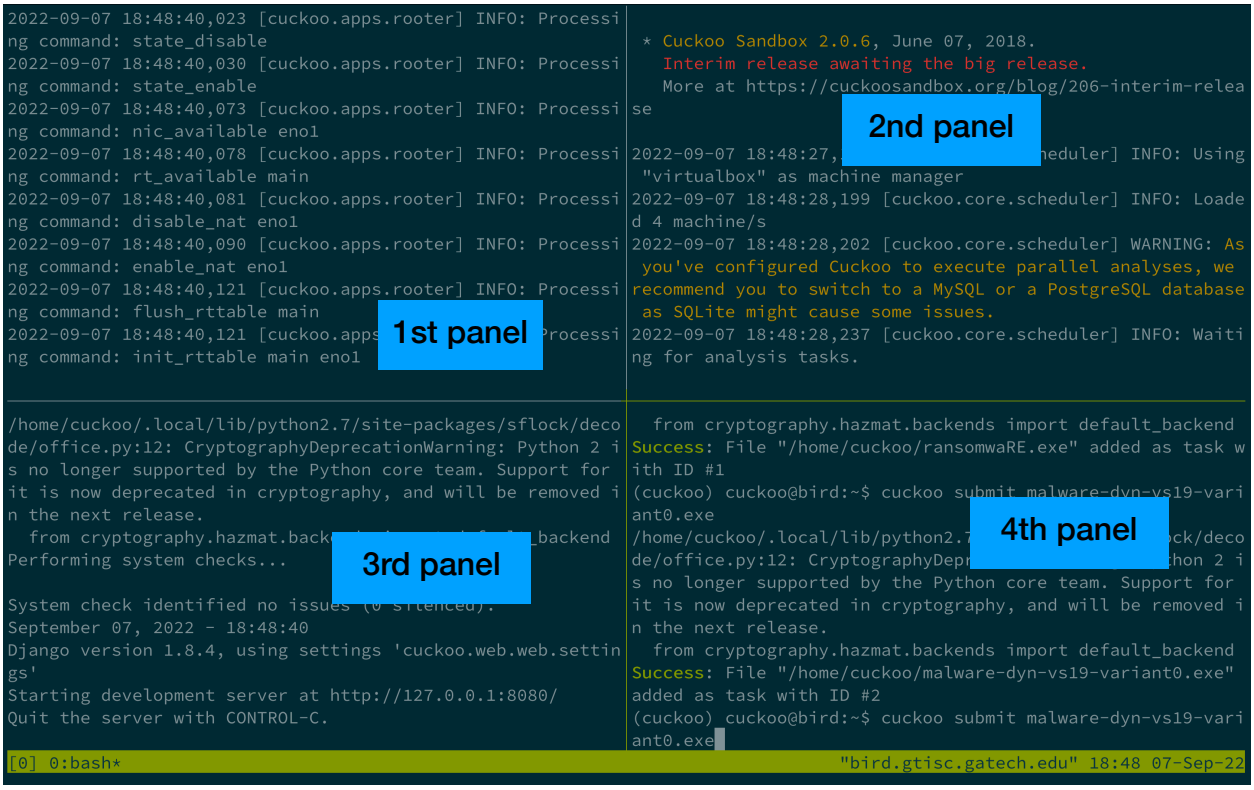
Routing Configuration and Start Cuckoo

Run rooter at 1st panel
cuckoo rooter --sudo --group cuckoo

Then modify routing Internet in “$USERHOME/.cuckoo/conf/virtualbox.conf.”
internet = <your internet interface>

```
[routing]
# Default network routing mode if none is specified by the user.
# In none mode we don't do any special routing - the VM doesn't have any
# network access (this has been the default actually for quite a while) aside
# from the subnet it exists in.
# In internet mode by default all the VMs will be routed through the network
# interface configured below (the "dirty line").
# And in VPN mode by default the VMs will be routed through the VPN identified
# by the given name of the VPN (as per the VPNs listed in the vpn section).
# Note that just like enabling VPN configuration setting this option to
# anything other than "none" requires one to run utils/rooter.py as root next
# to the Cuckoo instance (as it's required for setting up the routing).
route = none

# Network interface that allows a VM to connect to the entire internet, the
# "dirty line" so to say. Note that, just like with the VPNs, this will allow
# malicious traffic through your network. So think twice before enabling it.
# (For example, to use eth0 as dirty line: "internet = eth0").
internet = eno1
```

In the 2nd panel, run “cuckoo”
And in the 3rd panel, run “cuckoo web --host 127.0.0.1 --port 8080” to start the web interface.



Forward the port with ssh to localhost if you're using X11. Run this command from your host laptop.
ssh -L 8080:localhost:8080 twang626@143.215.130.251

And we can access web interface from your laptop at http://localhost:8080/

To submit a sample to cuckoo sandbox, run
cuckoo submit <file>

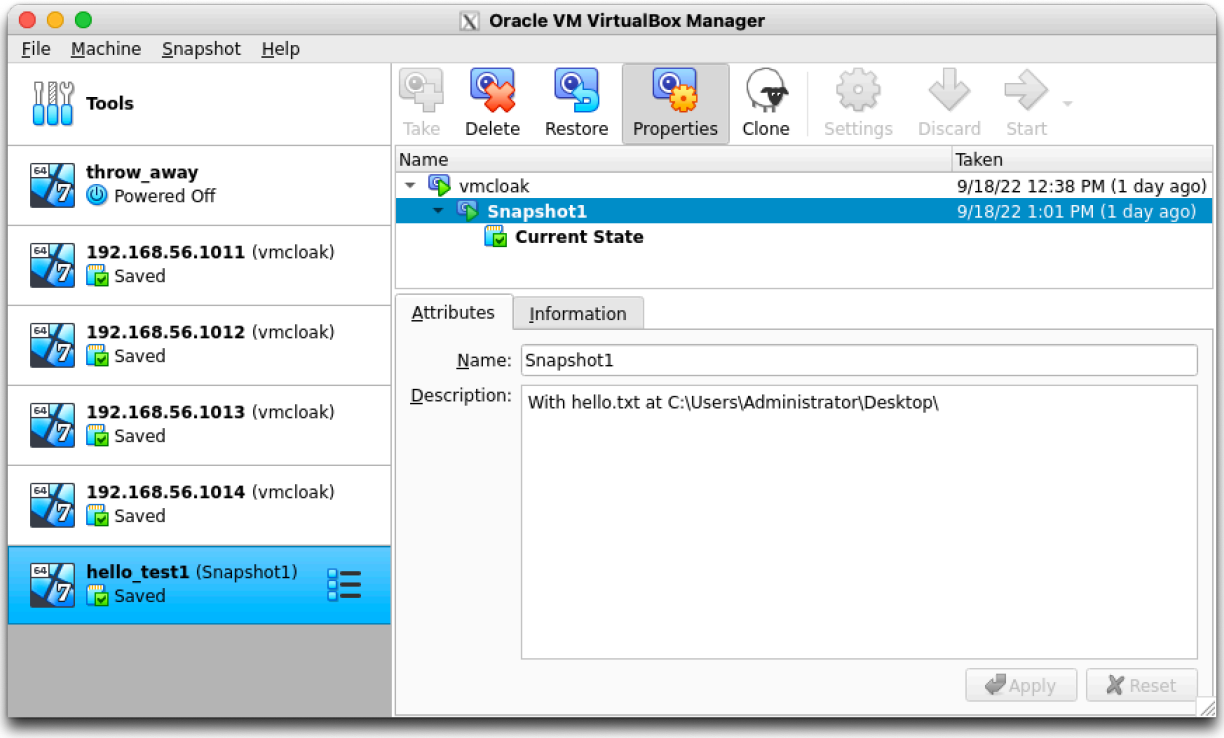
Report
~/.cuckoo/storage/analyses/<id>/reports/report.json

To get behavioral analysis
cat storage/analyses/<id>/reports/report.json | jq '.behavior'

To get screenshots
ls ~/.cuckoo/storage/analyses/<id>/shots/

Test connectivity and file readability

First, put a file hello.txt into the virtual machine, and create a snapshot.



Then, create a script that reads hello.txt and test network connectivity.

read_hello.ps1 UNREGISTERED

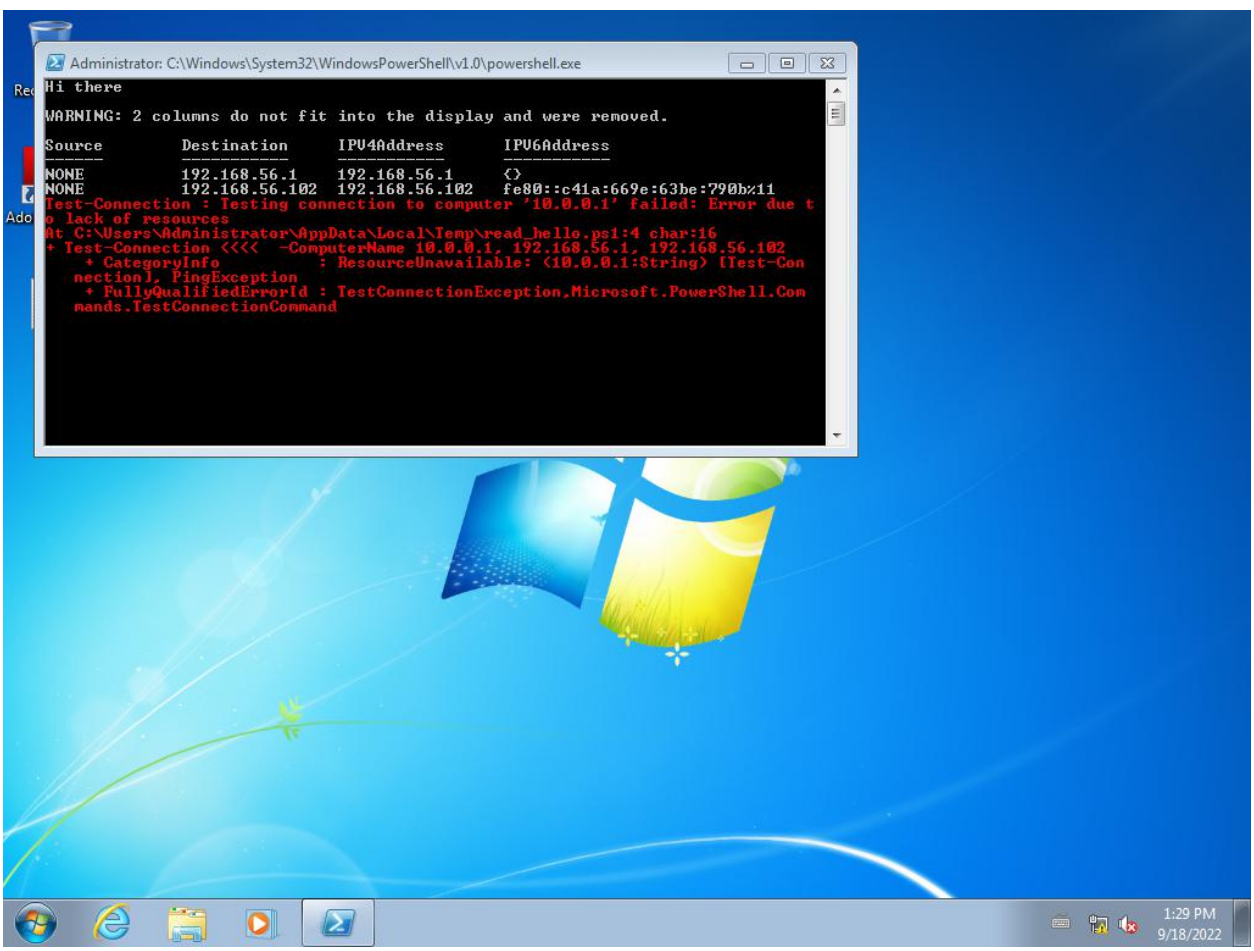
```
$content = Get-Content -Path C:\Users\Administrator\Desktop\hello.txt
Write-Output $content

Test-Connection -ComputerName 10.0.0.1, 192.168.56.1, 192.168.56.102
```

Line 5, Column 1 Spaces: 4 PowerShell

To test the network connectivity of one VM to another, we have to power on another VM. In my case, it's 192.168.56.102.

Finally, submit the script to our targeted VM in Cuckoo Sandbox.
cuckoo submit read_hello.ps1 --machine hello_test1

Here's the result, "Hi there" is the content of hello.txt that has already been put into VM earlier. 192.168.56.1 is the host machine IP address, and 192.168.56.102 is another VM address. 10.0.0.1 is a random address I used to showcase how it looks if an address is not reachable.



In conclusion, samples submitted to Cuckoo sandbox has the ability to read files in VM and connect to other VMs.