SaltStack 101

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What is SaltStack?

> “Salt delivers a dynamic communication bus for infrastructures that can be used for orchestration, remote execution, configuration management and much more.”

- Python
- ØMQ

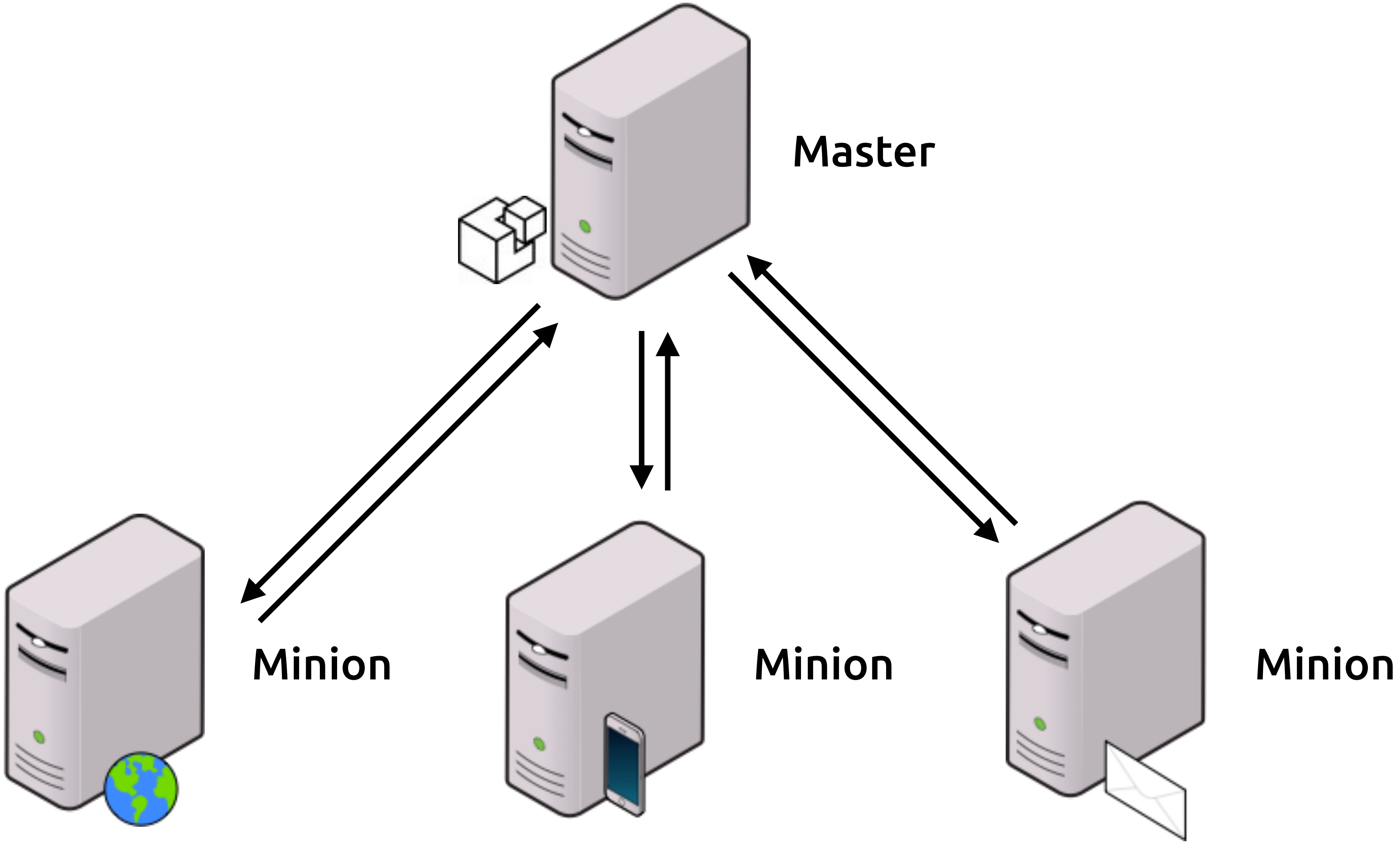
Terminology

- Master
- Minion
- State files
- Grains
- Pillars

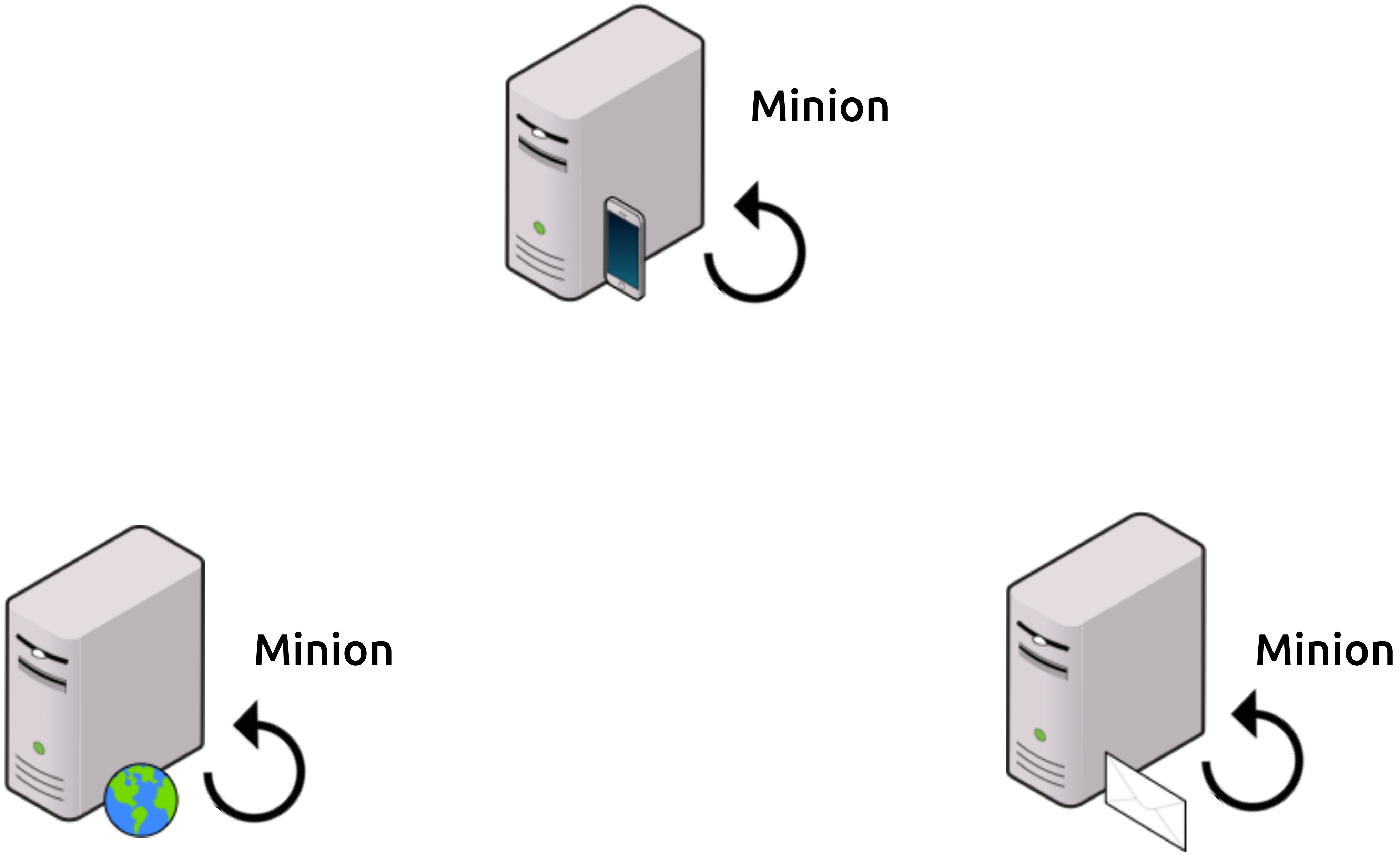
Server Setup

- Master Minion
- Masterless
- Multi Master

Master Minion



Masterless



Installing Master

```
$ sudo add-apt-repository ppa:saltstack/salt
$ sudo apt-get update
$ sudo apt-get install salt-master
$ sudo service salt-master status
salt-master start/running, process 4044
```

Installing Minion

```
$ sudo add-apt-repository ppa:saltstack/salt
$ sudo apt-get update
$ sudo apt-get install salt-minion
$ sudo service salt-minion status
salt-minion start/running, process 4901
```

Configure Master

```
# /etc/salt/master
...
- #interface: 0.0.0.0
+ interface: 127.0.0.1

$ sudo service salt-master restart
```

Configure Minion

```
# /etc/salt/minion
...
- #master: salt
+ master: 127.0.0.1
state_auto_order: True

$ sudo service salt-master restart
```

Key Management

```
$ sudo salt-key -L
Accepted Keys:
Unaccepted Keys:
sandbox
Rejected Keys:

$ sudo salt-key -a sandbox
The following keys are going to be accepted:
Unaccepted Keys:
sandbox
Proceed? [n/Y] Y
Key for minion sandbox accepted.

$ sudo salt-key -L
Accepted Keys:
sandbox
Unaccepted Keys:
Rejected Keys:
```

Sending Commands 1/2

```
$ sudo salt sandbox test.ping
sandbox:
    True

$ sudo salt -G 'os:Ubuntu' service.available salt-minion
sandbox:
    True

$ sudo salt '*' cmd.run 'lsb_release -a'
sandbox:
    No LSB modules are available.
    Distributor ID:Ubuntu
    Description: Ubuntu 12.04 LTS
    Release:  12.04
    Codename: precise
```

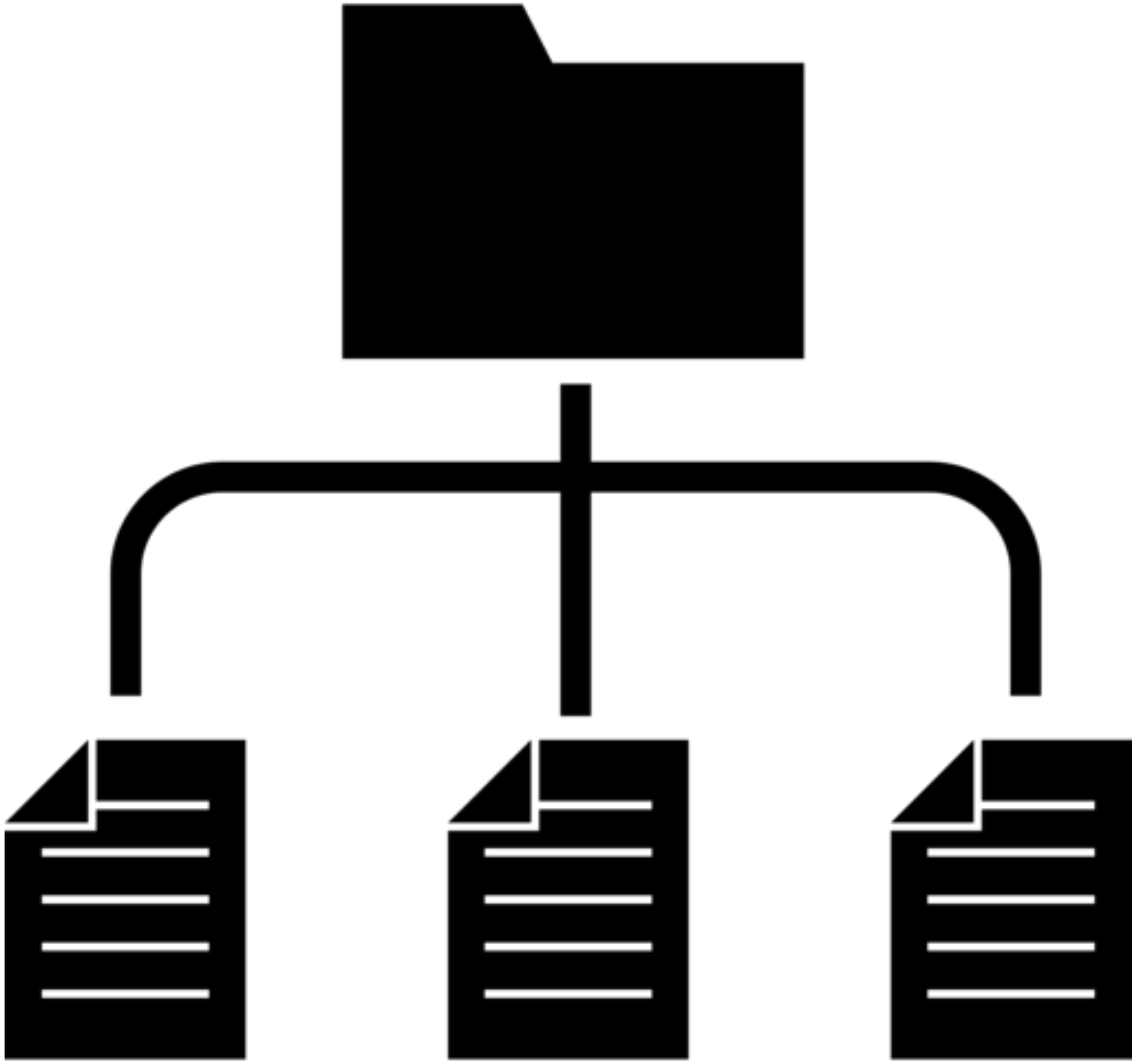
Sending Commands 2/2

```
$ sudo salt '*' cmd.exec_code python 'from __future__
import braces'
sandbox:
      File "/tmp/tmplI2lSy", line 1
        from __future__ import braces
    SyntaxError: not a chance

$ sudo salt '*' service.available nginx
sandbox:
    False
$ sudo salt '*' pkg.install nginx
sandbox:
…

$ sudo salt '*' service.available nginx
sandbox:
    True
```

Salt States (SLS files)



Writing State files 1/7

Enable file server

```
# /etc/salt/master
...
- #file_roots:
- #  base:
- #    - /srv/salt
+ file_roots:
+   base:
+     - /srv/salt

$ sudo service salt-master restart
```

Create top file

```
# /srv/salt/top.sls
base:
  '*':
    - webserver
```

Writing State files 2/7

Webserver state file

```
# /srv/salt/webserver.sls
...
nginx:
  pkg:
    - installed
  service:
    - running
    - watch:
      - pkg: nginx
      - file: default_conf

default_conf:
  file.exists:
    - name: /etc/nginx/sites-enabled/default
```

Writing State files 3/7

Execute state

```
$ sudo salt ‘*’ state.highstate
...

Summary
------------
Succeeded: 3
Failed:    0
------------
Total:     3
```

Writing State files 4/7

SLS Rendering

```
# /srv/salt/webserver.sls

nginx:
  pkg:
    - installed
  service:
    - running
    - watch:
      - pkg: nginx
      - file: app_conf
    - require:
      - file: app_conf
      - file: symlink_app_conf
      - cmd: nginx_default_config
...
```

Writing State files 5/7

```
# /srv/salt/webserver.sls
...
app_conf:
  file.managed:
    - name: /etc/nginx/sites-available/app.conf
    - source: salt://app/nginx.conf
    - template: jinja
    - defaults:
        {% if grains[’id’] == ’sandbox’ %}
        is_test: True
        {% else %}
        is_test: False
        {% endif %}
...
```

Writing State files 6/7

```
# /srv/salt/webserver.sls
...
symlink_app_conf:
  file.symlink:
    - name: /etc/nginx/sites-enabled/app.conf
    - target: /etc/nginx/sites-available/app.conf
    - force: True
    - makedirs: True

nginx_default_config:
  cmd.run:
    - name: rm -f /etc/nginx/sites-enabled/default
```

Writing State files 7/7

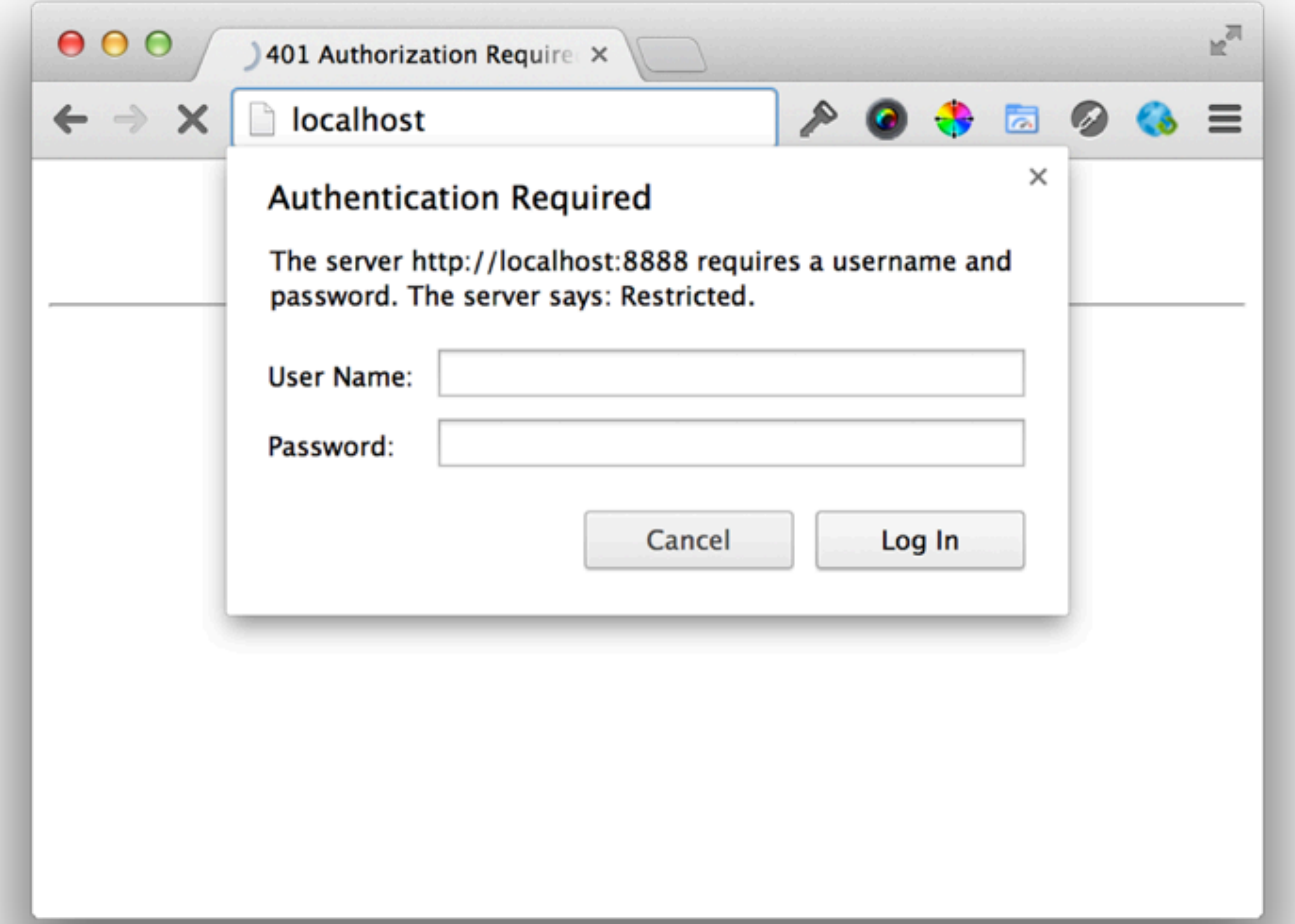
```
# /srv/salt/app/nginx.conf
server {
    listen 80 default;
    client_max_body_size 4G;
    keepalive_timeout 5;

    {% if is_test %}
    server_name _;
    {% else %}
    server_name sandbox.com;
    {% endif %}

    location / {
        {% if is_test %}
        auth_basic            "Restricted";
        auth_basic_user_file  /var/www/.htpasswd;
        {% endif %}

        proxy_pass         http://127.0.0.1:8000;
        proxy_redirect     off;
        proxy_buffering    off;
    }
}
```

It Works!



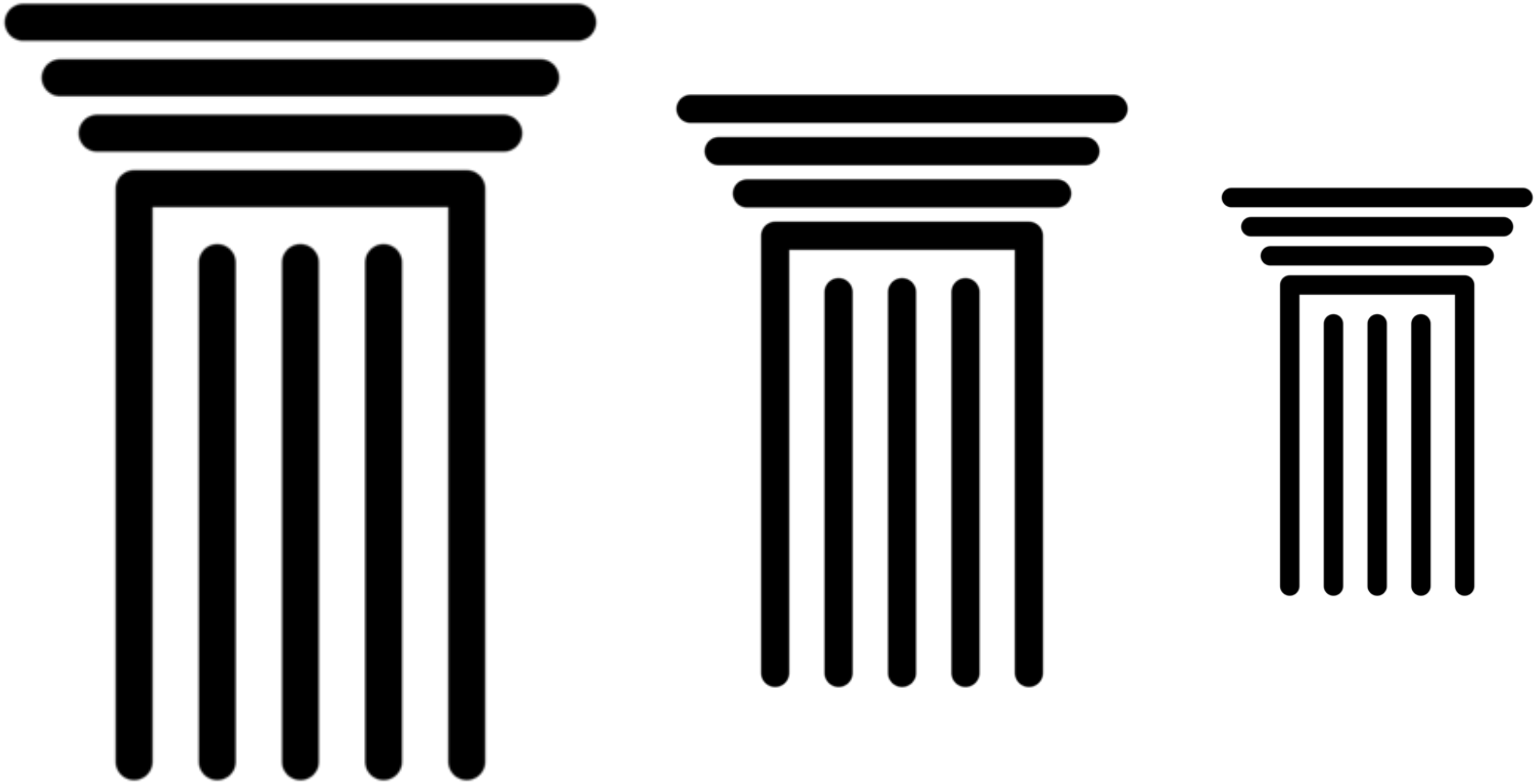
Authentication Required

The server http://localhost:8888 requires a username and password. The server says: Restricted.

User Name:

Password:

Pillars



Setup Pillars 1/3

Enable file server

```
# /etc/salt/master
...
- #pillar_roots:
- #  base:
- #    - /srv/pillar
+ pillar_roots:
+   base:
+     - /srv/pillar

$ sudo service salt-master restart
```

Create top file

```
# /srv/pillar/top.sls
base:
  '*':
    - settings
```

Setup Pillars 2/3

```
# /srv/salt/webserver.sls
app_conf:
    file.managed:
    - name: /etc/nginx/sites-available/app.conf
    - source: salt://app/nginx.conf
    - template: jinja
    - defaults:
        ...
        ssl_certificate: {{ pillar[’ssl_certificate’] }}
        ssl_certificate_key: {{ pillar[’ssl_certificate_key’] }}
```

```
# /srv/salt/app/nginx.conf
server {
    ...
    ssl on;
    ssl_certificate {{ ssl_certificate }};
    ssl_certificate_key {{ ssl_certificate_key }};
    ...
}
```

Setup Pillars 3/3

```
$ sudo salt ‘*’ state.highstate
...
Summary
------------
Succeeded: 5
Failed:    0
------------
Total:     5
```

```
$ sudo cat /etc/nginx/sites-enabled/app.conf
server {
    ...
    ssl on;
    ssl_certificate /etc/nginx/conf.d/sandbox.crt;
    ssl_certificate_key /etc/nginx/conf.d/sandbox.key;
    ...
}
```

Don’t want no Master

Going Masterless 1/2

```
# /etc/salt/minion
...
- #file_client: remote
+ file_client: local
...
- #file_roots:
- #  base:
- #    - /srv/salt
+ file_roots:
+   base:
+     - /srv/salt
...
- #pillar_roots:
- #  base:
- #    - /srv/pillar
+ pillar_roots:
+   base:
+     - /srv/pillar
```

Going Masterless 2/2

```
$ sudo service salt-minion restart
```

Or

```
$ sudo salt-call --local ...
```

Thank you

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