Onur Güzel

This was a triumph...

Subscribe via RSS

Home About Me Social Projects

How to Run Flask Applications with Nginx Using Gunicorn

We have recently bought a VPS for İTÜ24, the online newsletter of Istanbul Technical University. The server is running on Ubuntu Server 12.04 operating system. Due to limited memory resources and performance concerns, we preferred to setup nginx as web server.

Our server will serve several web pages and applications developed in various programming languages, such as PHP, Python, Ruby (on Rails). Currently, we have one Python application, which is using Flask framework.

How we run Flask application with nginx, step by step...

Step 0: Requirements

We work on a virtual Python environment, using virtualenv, and install Python packages with pip. Install these by typing:

```
sudo apt-get install python-virtualenv python-pip
```

Create a virtual environment and activate it.

```
virtualenv hello
source hello/bin/activate
```

Notice, your prompt is now prefixed with the name of the virtual environment.

Step 1: The Application

After installing Flask with pip, you can save the following code as "hello.py" and run it.

```
pip install Flask
```

hello.py

```
from flask import Flask
app = Flask(__name__)

@app.route('/')
def hello():
    return "Hello world!"

if __name__ == '__main__':
    app.run()
```

Flask has a built-in web server that allows you to run your application. However, it is not scalable and production ready. On the other hand, there is gunicorn which is a production ready Python WSGI server that also provides scalability.

Step 2: Gunicorn

```
pip install gunicorn
```

In order to make our application to work with gunicorn, we have to add two lines to it:

hello.py

```
01  from flask import Flask
02  from werkzeug.contrib.fixers import ProxyFix
03  app = Flask(__name__)
04
05  @app.route('/')
06  def hello():
07      return "Hello world!"
08
09  app.wsgi_app = ProxyFix(app.wsgi_app)
10
11  if __name__ == '__main__':
12      app.run()
```

Notice the 2nd and 9th lines. Now we can serve our application with Gunicorn.

```
gunicorn hello:app
```

"hello" is the name of the file (without extension). And "app" is the name of the Flask object. You can find more info about configuration of gunicorn on their web pages.

Step 3: Nginx

Create new server configuration and save the file in */etc/nginx/sites-available/hello.conf*.

hello.conf

@onurguzel on Twitter

Doktor öleceğimi söylese daha iyiydi. 4 ay ilaç + ameliyat nedir yahu? 1 week ago

Şu Fizik bölümünü 6 yıl yapsalar da tutarsız ders programlarından ve konsantre eğitimden kurtulsak. 1 week ago

Ah bir de nefes alabilsem! Bir dersten çıkıp koşa koşa üst kattakine giriyorum. Geç kaldığım için yok yazılıyorum. 1 week ago

Neden bilmiyorum, ama bu filmi çok seviyorum. http://t.co/zjr7qCLR #GetGlue #LoveMeIfYouDare 1 week ago

Çok acayip bir siteymiş bu ya: http://t.co/l0sDtEhD Türkçe'sini yapsak tutar mı? 1 week ago

More updates...

QR code

Categories

- iPhone
- İTÜ
- Linux
- Pardus
- Python Programming
- Snippets
- Uncategorized
- Web Programming

Links

- İTÜ24
- My ITU Page

Other

- Log in
- Entries RSS
- Comments RSS
- WordPress.org

```
server {
    listen 80;
    server_name hello.itu24.com;

    root /path/to/hello;

    access_log /path/to/hello/logs/access.log;
    error_log /path/to/hello/logs/error.log;

    location / {
        proxy_set_header X-Forward-For $proxy_add_x_forwarded_for;
        proxy_set_header Host $http_host;
        proxy_redirect off;
        if (!-f $request_filename) {
            proxy_pass http://127.0.0.1:8000;
            break;
        }
    }
}
```

Enable new configuration by creating a symbolic link in *sites-enabled* directory.

```
sudo ln -s /etc/nginx/sites-available/hello.conf /etc/nginx/sites-enabled/
```

Check configuration for errors:

```
nginx -t
```

If your configuration is ok, you can reload nginx and access your application now.

```
sudo service nginx reload
```

Update 2012/09/07: In order to start gunicorn automatically when the system reboots, check my new blog post!

Update 2012/10/05: You had better not use if statements in Nginx configurations, because if is evil! See this comment

- Post to Facebook
- Post to Twitter

Tagged as: flask, gunicorn, nginx, python, supervisor, ubuntu, virtualenv Leave a comment

Comments (4) Trackbacks (1) (subscribe to comments on this post)

istihza
September 2nd, 2012 - 00:23

This is a very nice and informative article, but one thing not mentioned is how you manage processes started by gunicorn. The tag list of the post makes me think that it is supervisor that controls the processes. However supervisor part is missing in the article.

(REPLY)

Onur Güzel
September 7th, 2012 - 17:43

I changed my mind while writing this post in order to keep this tutorial as simple as possible. And I wrote about supervisor in a different blog post. You can find it in the update section of the post.

(REPLY)

Brian Visel
October 3rd, 2012 - 04:33

Using the 'if' statement in a location like that is considered a bad idea by the nginx people.. ..they suggest instead using something like:
location / {
try_files $uri @gunicorn_proxy;
}
location @gunicorn_proxy {
proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
proxy_set_header Host $http_host;
proxy_redirect off;
proxy_pass http://127.0.0.1:8000;

```
}
```

..I don’t know if it matters that much, but it *is* one of their official pitfalls they warn about.

(REPLY)

Onur Güzel
October 5th, 2012 - 18:53

Posted an update in the post. Thanks Brian!

(REPLY)

Leave a Reply

Enter your comment here...

Supervisord: Restarting and Reloading » « Changing PDF Metadata under Linux

Go to top ↑