

RUNNING DJANGO ON AWS

Using Python 2.7 and Django >= 1.6 on AWS

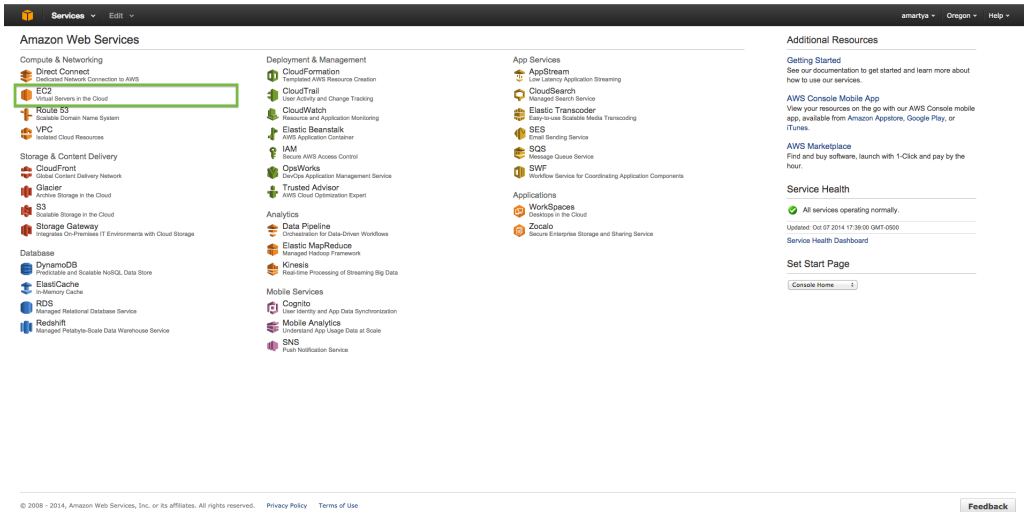
This is a step-by-step guide to deploying a Django app to AWS. Note, I mention Python 2.7 specifically. This is because AWS has Python 2.6 as the default version for it's linux distribution (as of writing this guide) . Django version 1.6 is the last one to support Python 2.6 and with Django 1.7 already out in the wild, it seems prudent to set up our stack for Python 2.7 (if not 3+).

Things we'll set up:

- Using Amazon's EC2 Management console to provision a server. For this, you need an AWS account with Amazon (aws.amazon.com).
- Install Apache and mod_wsgi. Python 2.7 requires a few additional steps to setup and compile mod_wsgi because the mod_wsgi that EC2 currently comes with is compiled against Python 2.6.
- Set up a database. In this case, MySQL
- Install Django
- Create a Django app and configure it to be served via Apache

Starting an AWS instance

1.



The screenshot shows the AWS Management Console interface. The 'Services' dropdown is set to 'All services'. The 'Compute & Networking' section is expanded, and the 'EC2' service is highlighted with a green box. The console also displays other services like CloudFormation, CloudTrail, CloudWatch, Elastic Beanstalk, IAM, OpsWorks, Trusted Advisor, Analytics, Data Pipeline, Elastic MapReduce, Kinesis, Mobile Services, and SNS. The right-hand side of the console shows 'Additional Resources' with links to 'Getting Started', 'AWS Console Mobile App', 'AWS Marketplace', 'Service Health', and 'Set Start Page'.

After logging in to the AWS management console, select EC2

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2. Follow the screenshots below to get an instance up and running.

Resources

You are using the following Amazon EC2 resources in the US West (Oregon) region:

- 1 Running Instance
- 1 Volume
- 1 Key Pair
- 0 Placement Groups
- 1 Elastic IP
- 0 Snapshots
- 0 Load Balancers
- 2 Security Groups

[Easily deploy Ruby, PHP, Java, .NET, Python, Node.js & Docker applications with Elastic Beanstalk.](#)

Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

[Launch Instance](#)

Note: Your instances will launch in the US West (Oregon) region

Service Health

Service Status:

- US West (Oregon): This service is operating normally

Availability Zone Status:

- us-west-2a: Availability zone is operating normally
- us-west-2b: Availability zone is operating normally
- us-west-2c: Availability zone is operating normally

[Service Health Dashboard](#)

Scheduled Events

US West (Oregon):

- No events

Account Attributes

Supported Platforms

- VPC

Default VPC

vpc-f65a89a

Additional Information

- Getting Started Guide
- Documentation
- All EC2 Resources
- Forums
- Pricing
- Contact Us

AWS Marketplace

Find **free software trial** products in the AWS Marketplace from the EC2 Launch Wizard. Or try these popular AMIs:

- Vyatta Virtual Router/Firewall/VPN
- Provided by Vyatta, Inc.
- Rating: ★★★★★
- Pay by the hour for software and AWS usage
- [View all Networking](#)

Alert Logic Threat Manager for AWS

- Provided by Alert Logic
- Rating: ★★★★★
- Pay by the hour for software and AWS usage
- [View all Security Software](#)

ColdFusion 11

- Provided by Orbitera
- Rating: ★★★★★
- Pay by the hour for software and AWS usage
- [View all Application Stacks](#)

[Find more software on AWS Marketplace](#)

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Step 1: Choose an Amazon Machine Image (AMI)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

[Cancel and Exit](#)

Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

Amazon Linux AMI 2014.09 (HVM) - ami-8786c6b7

The Amazon Linux AMI is an EBS backed image. It includes the 3.14 kernel, Ruby 2.1, PHP 5.5, PostgreSQL 9.3, Docker 1.2, the AWS command line tools, and repository access to many other packages.

[Free tier eligible](#)

Root device type: ebs Virtualization type: hvm

[Select](#)

Red Hat Enterprise Linux 7.0 (HVM) - ami-77d7a747

Red Hat Enterprise Linux version 7.0 (HVM), EBS-backed

[Free tier eligible](#)

Root device type: ebs Virtualization type: hvm

[Select](#)

SUSE Linux Enterprise Server 11 SP3 (HVM), SSD Volume Type - ami-3b0f420b

SUSE Linux Enterprise Server 11 Service Pack 3 (HVM), EBS General Purpose (SSD) Volume Type. Nvidia driver installs automatically during startup for GPU instances.

[Free tier eligible](#)

Root device type: ebs Virtualization type: hvm

[Select](#)

Ubuntu Server 14.04 LTS (HVM), SSD Volume Type - ami-3d50120d

Ubuntu Server 14.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

[Free tier eligible](#)

Root device type: ebs Virtualization type: hvm

[Select](#)

Microsoft Windows Server 2012 R2 Base - ami-d38dccc3

Microsoft Windows 2012 R2 Standard edition with 64-bit architecture. [English]

[Free tier eligible](#)

Root device type: ebs Virtualization type: hvm

[Select](#)

Are you launching a database instance? Try Amazon RDS.

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database of your choice (MySQL, PostgreSQL, Oracle, SQL Server) in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database management tasks, freeing you up to focus on your applications and business. [Learn more.](#)

[Launch a database using RDS](#)

Microsoft Windows Server 2012 R2 with SQL Server Web - ami-758bccd45

Microsoft Windows Server 2012 R2 Standard edition, 64-bit architecture, Microsoft SQL Server 2014 Web edition. [English]

[Select](#)

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We'll go with the Amazon flavoured Linux distro because they include a lot of the stuff we need by default.

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Services

Edit

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Oregon

Help

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Tag Instance

6. Configure Security Group

7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate
<input type="checkbox"/>	General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate
<input type="checkbox"/>	General purpose	m3.xlarge	4	15	2 x 40 (SSD)	Yes	High
<input type="checkbox"/>	General purpose	m3.2xlarge	8	30	2 x 80 (SSD)	Yes	High
<input type="checkbox"/>	Compute optimized	c3.large	2	3.75	2 x 16 (SSD)	-	Moderate
<input type="checkbox"/>	Compute optimized	c3.xlarge	4	7.5	2 x 40 (SSD)	Yes	Moderate
<input type="checkbox"/>	Compute optimized	c3.2xlarge	8	15	2 x 80 (SSD)	Yes	High
<input type="checkbox"/>	Compute optimized	c3.4xlarge	16	30	2 x 160 (SSD)	Yes	High
<input type="checkbox"/>	Compute optimized	c3.8xlarge	32	60	2 x 320 (SSD)	-	10 GigaBit

Cancel Previous Review and Launch Next: Configure Instance Details

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7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot Instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances

Purchasing option ☐ Request Spot Instances

Network [Create new VPC](#)

Subnet [Create new subnet](#)
4089 IP Addresses available

Auto-assign Public IP

IAM role

Shutdown behavior

Enable termination protection ☐ Protect against accidental termination

Monitoring ☐ Enable CloudWatch detailed monitoring
Additional charges apply.

Tenancy Additional charges will apply for dedicated tenancy.

Network interfaces

Device	Network Interface	Subnet	Primary IP	Secondary IP addresses
eth0	<input type="text" value="New network interface"/>	<input type="text" value="subnet-7328f016"/>	<input type="text" value="Auto-assign"/>	Add IP

[Add Device](#)

Advanced Details

Cancel Previous Review and Launch Next: Add Storage

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Nothing to do on this particular screen, move on to the next screen ("Add Storage").

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Services Edit

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Delete on Termination	Encrypted
Root	/dev/xvda	snap-e7973f2e	30	General Purpose (SSD)	24 / 3000	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel Previous Review and Launch Next: Tag Instance

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Maxing out the default storage for now. Amazon has something called RDS that allows us to attach resizable storage (you can see the option in the very first screen where we chose EC-2). However, it seems to be an overkill for our purposes and it seems prudent to have as much storage assigned to EC2 initially as possible.

Services Edit

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

Step 5: Tag Instance

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key (127 characters maximum)	Value (255 characters maximum)
Name	R

Create Tag (Up to 10 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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Give this instance a Name key to make it easier to track in the EC2 management console.

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1. Choose AMI2. Choose Instance Type3. Configure Instance4. Add Storage5. Tag Instance6. Configure Security Group7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:

☒ Create a new security group

☐ Select an existing security group

Security group name:

launch-wizard-2

Description:

launch-wizard-2 created 2014-10-07T17:42:06.502-05:00

Type	Protocol	Port Range	Source
SSH	TCP	22	Anywhere

Add Rule

Warning

Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel

Previous

Review and Launch

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The security group setting is IMPORTANT. Copy the configuration shown below. This basically says what kind of traffic/ports should the server allow. If you already have a security group and wish to reuse it, just add all these rules.

Type	Protocol	Port Range	Source
MYSQL	TCP	3306	0.0.0.0/0
SSH	TCP	22	0.0.0.0/0
HTTP	TCP	80	0.0.0.0/0
Custom TCP Rule	TCP	8000	0.0.0.0/0
HTTPS	TCP	443	0.0.0.0/0

Services

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1. Choose AMI2. Choose Instance Type3. Configure Instance4. Add Storage5. Tag Instance6. Configure Security Group7. Review

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

Improve your instance's security. Your security group, launch-wizard-1, is open to the world.

Your instance may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only. You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

AMI Details

Edit AMI

Free tier eligible

Amazon Linux AMI 2014.09 (HVM) - ami-8786c6b7

The Amazon Linux AMI is an EBS backed image. It includes the 3.14 kernel, Ruby 2.1, PHP 5.5, PostgreSQL 9.3, Docker 1.2, the AWS command line tools, and repository access to many other packages.

Root Device Type: ebs

Virtualization type: hvm

Edit instance type

Instance Type

Edit instance type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Edit security groups

Security Groups

Edit security groups

Security Group ID	Name	Description
sg-e5d04980	launch-wizard-1	launch-wizard-1 created 2014-10-06T12:24:01.905-05:00

All selected security groups inbound rules

Security Group ID	Type	Protocol	Port Range	Source
sg-e5d04980	MYSQL	TCP	3306	0.0.0.0/0
sg-e5d04980	SSH	TCP	22	0.0.0.0/0
sg-e5d04980	HTTP	TCP	80	0.0.0.0/0
sg-e5d04980	Custom TCP Rule	TCP	8000	0.0.0.0/0

Cancel

Previous

Launch

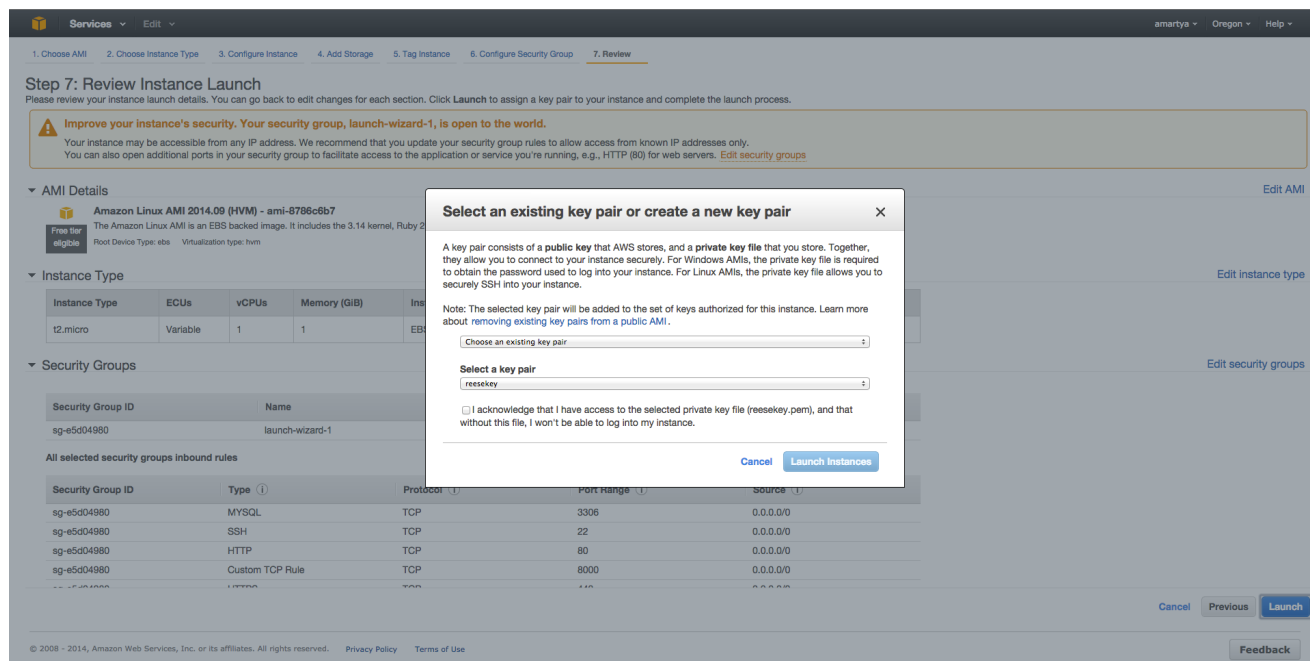
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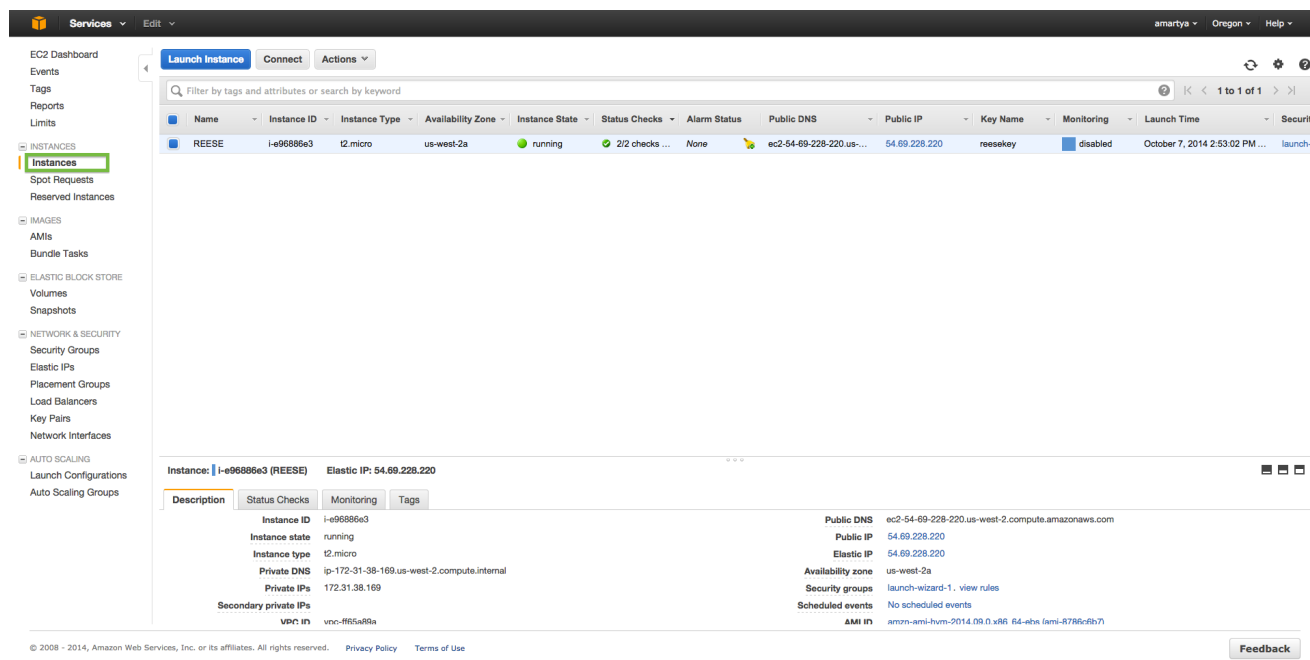
Feedback

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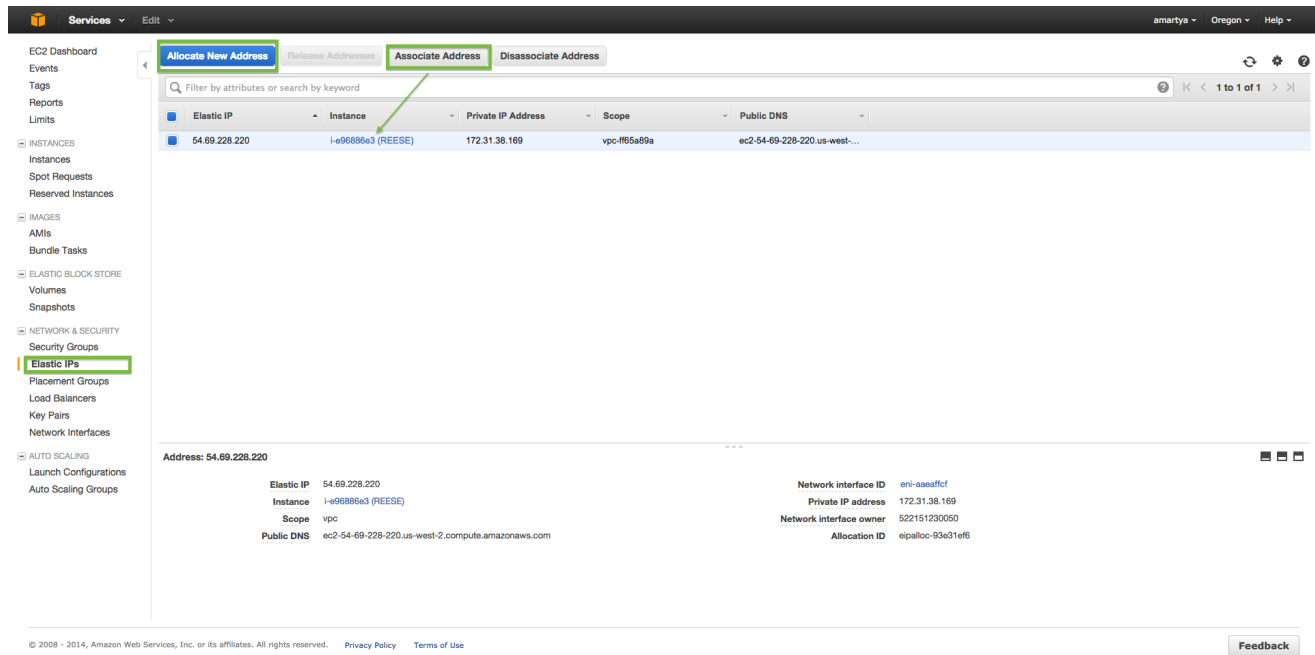
I already had a key setup. However, you can create a new key by selecting “Create a new Key Pair” and giving it a name. Download the key (I have it in a folder on Dropbox). We’ll have to edit the folder and permissions for this key.

We are almost done, just Launch Instance and navigate to the “Instances” section under the EC2 management console. You should see something similar to the screenshot below.



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AWS assigns us a public IP and a DNS. However, these are for a machine in the cloud that might be restarted. Which implies that this IP could randomly change. To fix that, we need to create an “Elastic IP” and “Associate” it with the EC2 instance that we just created.



The screenshot shows the AWS Management Console interface. The left sidebar contains a navigation menu with categories like EC2 Dashboard, INSTANCES, IMAGES, ELASTIC BLOCK STORE, NETWORK & SECURITY, and AUTO SCALING. The 'Elastic IPs' link under NETWORK & SECURITY is highlighted with a green box. The main content area shows the 'Associate Address' tab selected, with a green box around it and a green arrow pointing to the 'Instance' column in the table below. The table lists the Elastic IP details:

Elastic IP	Instance	Private IP Address	Scope	Public DNS
54.69.228.220	i-e96886e3 (REESE)	172.31.38.169	vpc-f65a89a	ec2-54-69-228-220.us-west-2.compute.amazonaws.com

Below the table, the 'Address: 54.69.228.220' section provides detailed information:

Property	Value
Elastic IP	54.69.228.220
Instance	i-e96886e3 (REESE)
Scope	vpc
Public DNS	ec2-54-69-228-220.us-west-2.compute.amazonaws.com
Network interface ID	eni-aa5affcf
Private IP address	172.31.38.169
Network interface owner	522151230050
Allocation ID	eipalloc-93a31e65

That's it! Once we have an elastic IP pointing to our instance, a server restart on Amazon's end would no longer result in our work being lost in the ether :).

Moving on to setting up the setup that includes apache, django etc. from the next page.

Installing Apache and Mod_Wsgi

1. First, we have to login to our EC2 instance that we set up. Fire up Terminal on the Mac and navigate to the folder containing the key you downloaded (the *.pem file). You can copy paste the commands from the text boxes that follow:

```
#Login
#Can use the domain name (ec2-aws....) instead of the I.P. too
chmod 400 reesekey.pem (change file permissions to be able to add the reesekey.pem as an ssh key)
ssh-add reesekey.pem
cd path_to_ #keypair location
ssh -i reesekey.pem ec2-user@54.69.228.220 #use elastic IP.

#if it throws a warning saying that the "remote host identification has changed", run "ssh-keygen -R 54.69.228.220"
#and then follow if up with the "ssh -i reesekey.pem ec2-user@54.69.228.220" command
```

2. Once we are logged in, try using the command "pwd" (present working directory). It should say something like "/home/ec2-user". Now run "python -V". Currently EC2 comes with Python 2.6, we'll start by updating it to Python 2.7 for future Django versions. We also install Pip, a fantastic python package manager :).

```
# install build tools
sudo yum install make automake gcc gcc-c++ kernel-devel git-core -y

# install python 2.7 and change default python symlink
sudo yum install python27-devel -y
sudo rm /usr/bin/python
sudo ln -s /usr/bin/python2.7 /usr/bin/python

# yum still needs 2.6, so write it in and backup script
sudo cp /usr/bin/yum /usr/bin/_yum_before_27
sudo sed -i s/python/python2.6/g /usr/bin/yum
sudo sed -i s/python2.6/python2.6/g /usr/bin/yum

# should now display 2.7.5 or later instead of 2.6xx:
python -V

# now install pip for 2.7
#Just to keep things neat, create a downloads directory in ec2-user
# for all application packages (rpm, tar etc.)
cd /home/ec2-user
mkdir downloads
cd downloads
wget https://bootstrap.pypa.io/get-pip.py
sudo python get-pip.py

# should display current version of pip:
pip -V
```


3. Install apache

```
#Apache
sudo yum install httpd #installs apache as a service

sudo service httpd start
#starts apache, test by going to http://<your elastic IP> here it was http://54.69.228.220
sudo service httpd stop #stops apache
sudo service httpd restart #restarts apache
sudo chkconfig httpd on #starts the Apache service whenever the server reboots
```

You should see the Apache default welcome screen.

4. Just having Apache is not going to work when we try to serve a Django view. We need another interface called `mod_wsgi` that acts as a conduit. While `mod_wsgi` comes with EC2 as default, we'll have to do some grunt work to get `mod_wsgi` to work with the updated Python 2.7 that we got going (the original version that came with the EC2 instance was compiled for Python 2.6).

```
#Mod-Wsgi
#wsgi = Web Server Gateway Interface, a python spec. for server to application communication
# install development apache tools
yum install httpd-devel.x86_64

#downloads and compiles mod_wsgi to be used for python2.7, I recommend using the downloads folder
# you created while installing pip (step-2) before you run the wget
wget http://modwsgi.googlecode.com/files/mod_wsgi-3.4.tar.gz
tar -zxvf mod_wsgi-3.4.tar.gz
cd mod_wsgi-3.4
./configure --with-python=/usr/bin/python2.7
make
sudo make install
```

Installing MySQL

Next, we'll install MySQL. After installing MySQL, we need to ensure that we install the python driver for it, create a database along with a user (root) and password. The commands are all listed below:

```
#MySQL
sudo yum install mysql mysql-server MySQL-python mysql-devel
sudo pip install MySQL-python #python driver for MySQL
service mysqld start #start MySQL server
/usr/bin/mysqladmin -u root password 'R33535' # Set password for MySQL root user'
mysql -u root -p -e 'CREATE DATABASE reese' (if it asks for pwd: R33535)
#Enter python shell and "import MySQLdb" to test installation
#if something went wrong and you wish to reinstall mysql
#sudo yum -y remove mysql-server
```

Installing and configuring Django App

In this part of the guide, we'll install Django, create a basic Django app and then serve it via the mod_wsgi and Apache layers we'd added in the previous step.

Once you've installed the app, we need to configure our server to serve this Django app. Go to the next page for the apache mod_wsgi settings.

```
#Django
sudo pip install django==1.6

#If this fails, get the latest package from the django servers and follow the steps below
wget https://www.djangoproject.com/download/1.7/tarball/ #download Django
mv index.html Django-1.7.tar.gz #renaming file manually, giving a file name didn't work in the prev.
step
tar xvf Django-1.7.tar.gz #extract tar archive, x= get, v= verbose, w= interactive(not used here),
f=file/hostname
cd Django-1.7
python setup.py install #installs django
#Enter python shell and "import django" to test installation

#create basic Django project in a directory of choice, I created it in my /home/ec2-user directory
django-admin.py startproject reese

#If you go inside the reese directory, you'd notice that Django has created another directory called
#reese inside 'this' reese directory. That's normal :). In the outer reese directory, you should see
#a file called manage.py at the same level as another "reese" directory
```

Here's a slightly tricky part. It's tricky only because we need to pay extra attention to the file paths that we lay out. Bear with me :), it isn't as bad as it might seem. To start off, we need to access/edit Apache's config file (httpd.conf).

```
#Configure apache to serve from Django app
#Edit the httpd.conf file in /etc/httpd/conf/
sudo vim /etc/httpd/conf/httpd.conf

# Add to the end of the opened file. tip: use ctrl+d to scroll down & ctrl+u to scroll up
WSGIPythonHome /usr
WSGIPythonPath /home/ec2-user/reese:/usr/lib64/python2.7/site-packages:/usr/lib64/python2.7
<VirtualHost *:80>
    DocumentRoot /home/ec2-user/reese
    ErrorLog /home/ec2-user/reese/logs/apache_error.log
    CustomLog /home/ec2-user/reese/logs/apache_access.log combined
    WSGIScriptAlias / /home/ec2-user/reese/apache/django.wsgi
    Alias /static/ /home/ec2-user/reese/static/

    <Directory /home/ec2-user/reese/media>
        Order deny,allow
        Allow from all
    </Directory>

    <Directory /home/ec2-user/reese/apache>
        Order deny,allow
        Allow from all
    </Directory>

    LogLevel warn
</VirtualHost>

#THEN find a couple of lines that say User and Group in the same file, mine were line numbers 243
#and 244 and change them to ec2-user (screenshot below)

-
# User/Group: The name (or #number) of the user/group to run httpd as.
# . On SCO (ODT 3) use "User nouser" and "Group nogroup".
# . On HP-UX you may not be able to use shared memory as nobody, and the
#   suggested workaround is to create a user www and use that user.
# NOTE that some kernels refuse to setgid(Group) or semctl(IPC_SET)
# when the value of (unsigned)Group is above 60000;
# don't use Group #-1 on these systems!
#
User ec2-user
Group ec2-user

### Section 2: 'Main' server configuration
#
# The directives in this section set up the values used by the 'main'
# server, which responds to any requests that aren't handled by a
# <VirtualHost> definition. These values also provide defaults for
# any <VirtualHost> containers you may define later in the file.
#
-- INSERT --
244,15      18%
```

#save and exit this file (:wq is the Vim command)

#Run apachectl configtest to ensure that the file is syntactically correct

#We've done a few things here. We've told apache that it should redirect all HTTP traffic (port 80) to the /home/ec2-user/reese directory. You see a reference to a django.wsgi file, folders such as #media, static, apache and logs. These directories don't exist right now, we'll create them :).

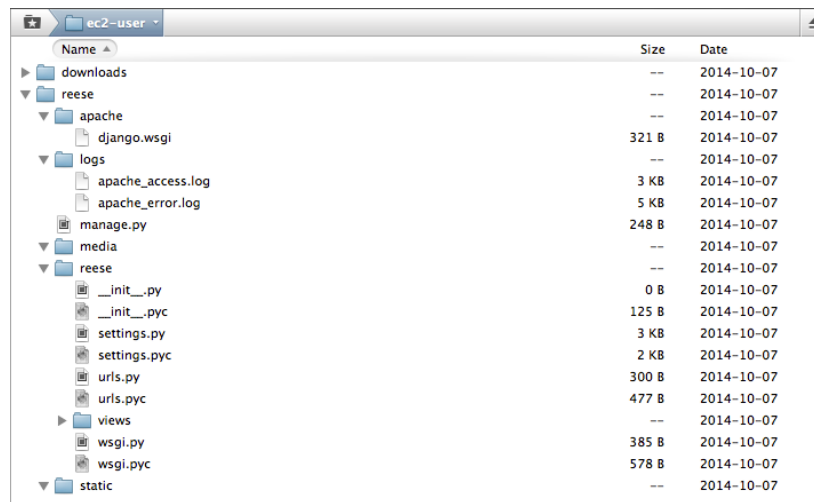
Go to the parent reese folder (/home/ec2-user/reese), create 2 folders, logs and apache

In the apache folder, create a django.wsgi file (note the WSGIScriptAlias variable in the httpd.conf. file above)

Similarly, create blank log files called apache_error.log and apache_access.log in the logs folder

Just ensure that the paths make sense w.r.t. the configuration shown above (httpd.conf)

Basically, your directory structure should be similar to the screenshot below (screenshot from FTP client):



The screenshot shows an FTP client window titled 'ec2-user'. It displays a directory tree with the following structure:

Name	Size	Date
downloads	--	2014-10-07
reese	--	2014-10-07
apache	--	2014-10-07
django.wsgi	321 B	2014-10-07
logs	--	2014-10-07
apache_access.log	3 KB	2014-10-07
apache_error.log	5 KB	2014-10-07
manage.py	248 B	2014-10-07
media	--	2014-10-07
reese	--	2014-10-07
__init__.py	0 B	2014-10-07
__init__.pyc	125 B	2014-10-07
settings.py	3 KB	2014-10-07
settings.pyc	2 KB	2014-10-07
urls.py	300 B	2014-10-07
urls.pyc	477 B	2014-10-07
views	--	2014-10-07
wsgi.py	385 B	2014-10-07
wsgi.pyc	578 B	2014-10-07
static	--	2014-10-07

Don't worry if you don't have a directory called views in there, that's something I created later on. After the https.conf file has been edited and saved, restart the server (sudo service https restart).

With all fingers crossed and a prayer, go to `http:<your elastic I.P.>` (in this case <http://54.69.228.220/>) and you should see this :)

It worked!

Congratulations on your first Django-powered page.

Of course, you haven't actually done any work yet. Next, start your first app by running `python manage.py startapp [appname]`.

You're seeing this message because you have `DEBUG = True` in your Django settings file and you haven't configured any URLs. Get to work!

So right now Django is running in Debug mode. We need to turn off debug mode and setup Django to use the MySQL database we had set up. To do that, we need to edit the settings.py file

```
vim /home/ec2-user/reese/reese/settings.py

#find the DATABASE variable and change it from the default sqllite to MySQL

DATABASES = {
    'default': {
        'ENGINE': 'django.db.backends.mysql', # Add 'postgresql_psycopg2', 'mysql', or 'sqlite3'
        'NAME': 'reese',
        'USER': 'root',
        'PASSWORD': 'R33535',
        'HOST': '',
        'PORT': '', # Set to empty string for default.
        'OPTIONS': {
            "init_command": "SET foreign_key_checks = 0;",
        },
    }
}

#then find the ALLOWED_HOSTS variable and change it to:
ALLOWED_HOSTS = ['*']

#finally, find the variable called DEBUG and set it to false
DEBUG = False
```

To test if things are still working, create a view. I prefer having a folder that contains all my views. So I created a “views” folder in the same directory that contains the settings.py file. Make sure you create a file (empty file) called `__init.py__` inside this views folder, it tells django to look inside this directory for files. I created a view called “home” with a function called index that returns a json.

```
#This is the home.py file

from django.template import RequestContext, Context
from django.core.urlresolvers import reverse
from django.http import HttpResponse
from django.http import HttpResponseRedirect
from django.shortcuts import redirect
from django.shortcuts import render
from django.views.decorators.csrf import csrf_protect
from django.shortcuts import render_to_response
from django.conf import settings

import json

def index(request):
    return HttpResponse(json.dumps({'REESE' : 'frogpond'}), content_type="application/json")

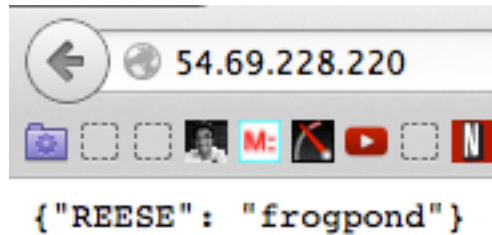
#then edit the urls.py to something like

from django.conf.urls import patterns, include, url
from django.contrib import admin

admin.autodiscover()

urlpatterns = patterns('',
    # Examples:
    url(r'^$', 'reese.views.home.index', name='home'),
    url(r'^blog/', include('blog.urls')),
    url(r'^admin/', include(admin.site.urls)),
)
```

Now, going to `http://<your elastic I.P>`, i.e. `http://54.69.228.220/` in this case, should result in the following page:



Success!

Next: We look at how to setup Django to enable us to post data without running into cross-origin resource issues (e.g. when posting data from a standalone app to our end-point/server)

Getting Django and Dart to play nice

We want to be able to POST data to our server while getting around cross-site security issues that most browsers check against. Broadly, we'll do the following:

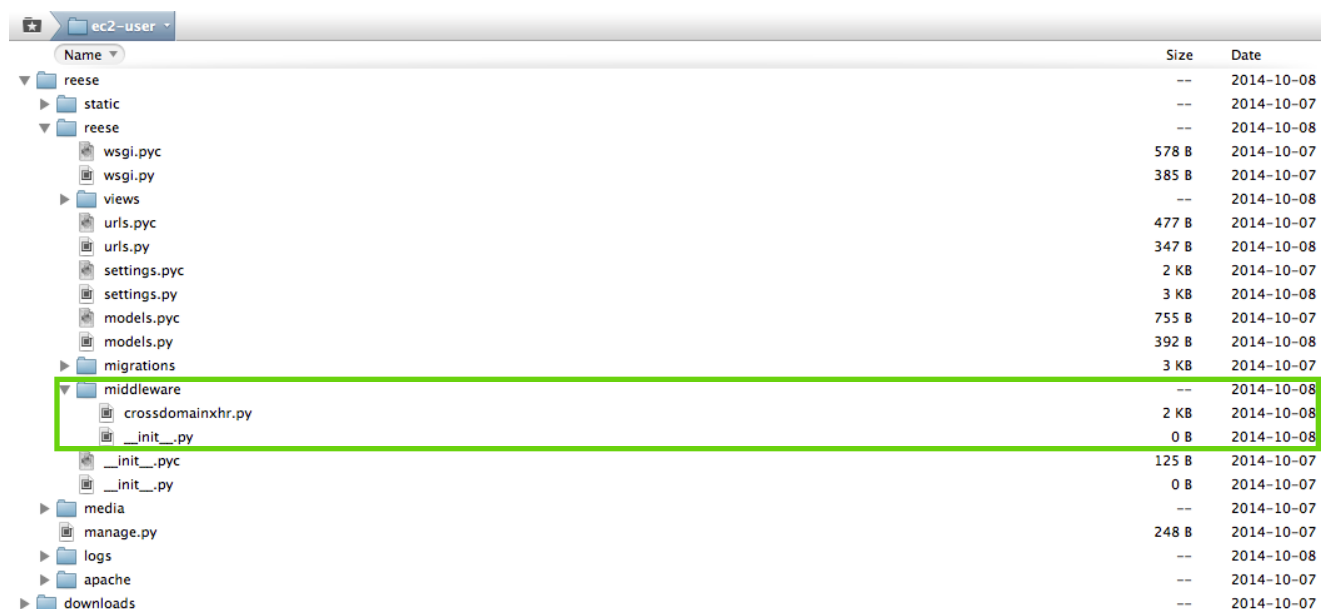
- Setup Django according to the specs laid out in [CORS](#) (Cross-Origin Resource Sharing).
- Create and POST a json request from Dart.
- Look at Django's csrf (cross-site request forgery) security issue

Django Setup for CORS

While we could have manually set this up according to the CORS specs in each view, since Django supports plugins/middleware, it is neater to add CORS relevant code as a middleware.

In your Django app, create a folder called "middleware". Inside it create 2 files, `__init__.py` (empty file that tells Django that this directory is a part of your project) and `crossdomainxhr.py`

This is what the directory structure should look like



Name	Size	Date
reese	--	2014-10-08
static	--	2014-10-07
reese	--	2014-10-08
wsgi.pyc	578 B	2014-10-07
wsgi.py	385 B	2014-10-07
views	--	2014-10-08
urls.pyc	477 B	2014-10-07
urls.py	347 B	2014-10-08
settings.pyc	2 KB	2014-10-07
settings.py	3 KB	2014-10-08
models.pyc	755 B	2014-10-07
models.py	392 B	2014-10-08
migrations	3 KB	2014-10-07
middleware	--	2014-10-08
crossdomainxhr.py	2 KB	2014-10-08
__init__.py	0 B	2014-10-08
__init__.pyc	125 B	2014-10-07
__init__.py	0 B	2014-10-07
media	--	2014-10-07
manage.py	248 B	2014-10-07
logs	--	2014-10-08
apache	--	2014-10-07
downloads	--	2014-10-07

Inside the `crossdomainxhr.py` file, paste the following code

```
from django import http

try:
    from django.conf import settings
    XS_SHARING_ALLOWED_ORIGINS = settings.XS_SHARING_ALLOWED_ORIGINS
    XS_SHARING_ALLOWED_METHODS = settings.XS_SHARING_ALLOWED_METHODS
    XS_SHARING_ALLOWED_HEADERS = settings.XS_SHARING_ALLOWED_HEADERS
    XS_SHARING_ALLOWED_CREDENTIALS = settings.XS_SHARING_ALLOWED_CREDENTIALS
except AttributeError:
    XS_SHARING_ALLOWED_ORIGINS = '*'
    XS_SHARING_ALLOWED_METHODS = ['POST', 'GET', 'OPTIONS', 'PUT', 'DELETE']
    XS_SHARING_ALLOWED_HEADERS = ['Content-Type', '*']
    XS_SHARING_ALLOWED_CREDENTIALS = 'true'

class XsSharing(object):
    """
    This middleware allows cross-domain XHR using the html5 postMessage API.

    Access-Control-Allow-Origin: http://foo.example
    Access-Control-Allow-Methods: POST, GET, OPTIONS, PUT, DELETE

    Based off https://gist.github.com/426829
    """
    def process_request(self, request):
        if 'HTTP_ACCESS_CONTROL_REQUEST_METHOD' in request.META:
            response = http.HttpResponse()
            response['Access-Control-Allow-Origin'] = XS_SHARING_ALLOWED_ORIGINS
            response['Access-Control-Allow-Methods'] = ",".join( XS_SHARING_ALLOWED_METHODS )
            response['Access-Control-Allow-Headers'] = ",".join( XS_SHARING_ALLOWED_HEADERS )
            response['Access-Control-Allow-Credentials'] = XS_SHARING_ALLOWED_CREDENTIALS
            return response

        return None

    def process_response(self, request, response):
        response['Access-Control-Allow-Origin'] = XS_SHARING_ALLOWED_ORIGINS
        response['Access-Control-Allow-Methods'] = ",".join( XS_SHARING_ALLOWED_METHODS )
        response['Access-Control-Allow-Headers'] = ",".join( XS_SHARING_ALLOWED_HEADERS )
        response['Access-Control-Allow-Credentials'] = XS_SHARING_ALLOWED_CREDENTIALS

        return response
```

Now, we need to add this to our settings file (`settings.py`) and assign a couple of variables:

```
#Cross-site sharing related vars
XS_SHARING_ALLOWED_ORIGINS = '*'
XS_SHARING_ALLOWED_METHODS = ['POST', 'GET', 'OPTIONS']
XS_SHARING_ALLOWED_HEADERS = ['Content-Type', '*']

.
.
.
MIDDLEWARE_CLASSES = (
    'django.contrib.sessions.middleware.SessionMiddleware',
    'django.middleware.common.CommonMiddleware',
    'django.middleware.csrf.CsrfViewMiddleware',
    'django.contrib.auth.middleware.AuthenticationMiddleware',
    'django.contrib.messages.middleware.MessageMiddleware',
    'django.middleware.clickjacking.XFrameOptionsMiddleware',
    'reese.middleware.crossdomainxhr.XsSharing', # JUST ADD THIS to MIDDLEWARE_CLASSES
)
```


Basically, we just told our Django app to accept cross-origin requests of type POST/GET/ OPTIONS/ etc. Restart your server for good measure even though it's not mandatory ("sudo service https restart")

Dart Code

We can post from any machine. Notice the url we are posting to, it has to be a valid url defined in urls.py in Django.

```
import 'dart:html';
import 'dart:convert';

void main() {
  querySelector("#submit-btn")
    ..text = "Submit"
    ..onClick.listen(sendData);
}

void sendData(MouseEvent event) {
  InputElement appId = document.querySelector("#app-id");
  InputElement appData = document.querySelector("#app-data");

  HttpRequest request = new HttpRequest(); // create a new XHR

  // add an event handler that is called when the request finishes
  request.onReadyStateChange.listen((_) {
    if (request.readyState == HttpRequest.DONE &&
        (request.status == 200 || request.status == 0)) {
      // data saved OK.
      print(request.responseText); // output the response from the server
    }
  });

  //Store form data
  Map data = new Map();
  data['app_id'] = appId.value;
  data['app_data'] = appData.value;

  //setup to POST data to the server
  //request.open("POST", "http://54.69.228.220/reese/", async: false);
  request.open("POST", "http://54.69.228.220/reese/", async: true);

  //we can set the content type to "application/x-www-form-urlencoded; charset=UTF-8"
  //otherwise the Django side gets an empty POST Query dictionary,
  //If we set the content-type to application/json, we can use the request.body
  //variable in Django
  //request.setRequestHeader("Content-type", "application/x-www-form-urlencoded;
  charset=UTF-8");

  request.setRequestHeader("Content-type", "application/json");

  request.send(JSON.encode(data)); // perform the async POST
}
```

One would expect that this would be enough, however, if you try to post something right now, you'd get a 403 response similar to the screenshot below

Logging for Frog Pond!

App Id

App Data

The screenshot shows the Network tab of a web browser. The list of requests includes logging.html, logging.dart, logging.css, dart.js, and reese/. The reese/ request is highlighted with a red border and shows a 403 Forbidden status. The details for this request show a POST method, a status of 403 FORBIDDEN, and a response size of 1006 B.

Name	Method	Status	Type	Initiator	Size	Time	Timeline
logging.html	GET	200 OK	text/html	Other	1.0 KB	8 ms	
logging.dart	GET	200 OK	application/dart	logging.html:9	1.4 KB	15 ms	
logging.css	GET	200 OK	text/css	logging.html:11	1.5 KB	25 ms	
dart.js	GET	200 OK	application/javascript	logging.html:10	1.5 KB	40 ms	
reese/	OPTIONS	200 OK	text/html	Other	372 B	270 ms	
reese/	POST	403 FORBIDDEN	text/html	Other	1.4 KB	294 ms	

We need to do one last thing :).

Setting the Django csrf flag

It's also called a decorator in Django parlance. Adding a decorator "@csrf_exempt" just above your Django view would do it

```
from django.views.decorators.csrf import csrf_exempt

#include the decorator "@csrf_exempt" for all views that receive data without csrf token
@csrf_exempt
def reeseolog(request):
    if request.method == "POST":
        try:
            #read request data as json from request body
            request_data = json.loads(request.body)

            #store the app_id and app_data payload
            app_id = request_data['app_id']
            app_data= request_data['app_data']
        except:
            app_id = "appID error"
            app_data = "appData error"
            return HttpResponse(json.dumps({'status': 'failed to saved data'}),
            content_type="application/json")

        #create a log object and save it in the database
        log_data = FrogPondLog(name=app_id, data=app_data)
        log_data.save()

        return HttpResponse(json.dumps({'status': 'data saved successfully'}),
        content_type="application/json")
```

HowTo: Deploying Django App to AWS

Now, if you try to POST data from the remote/cross-site, it should work :)

The screenshot displays a web browser window on the left and a database management tool on the right. The browser shows a 'Logging for Frog Pond!' form with 'App Id' set to 'Frog Pond' and 'App Data' set to 'SAVE Player Data'. A 'Submit' button is visible. The database tool, titled '(MySQL 5.5.40) REESE/reese/reese_frogpondlog', shows a table with one row: '24 Frog Pond SAVE Player Data 2014-10-09 01:05:36'. The table structure is listed on the left, and the table information is shown at the bottom right.

Waiting for 54.69.228.220...

Elements Network Sources Timeline Profiles Resources Audits Observatory Console

<top frame (JavaScript)>

["status": "data saved successfully"]

TABLES

- auth_group
- auth_group_permissions
- auth_permission
- auth_user
- auth_user_groups
- auth_user_user_permissions
- django_admin_log
- django_content_type
- django_session
- reese_frogpondlog
- south_migrationhistory

TABLE INFORMATION

- created: 2014-10-08
- engine: InnoDB
- rows: 1
- size: 16.0 KiB
- encoding: latin1
- auto_increment: 25

id	name	data	logTime
24	Frog Pond	SAVE Player Data	2014-10-09 01:05:36

1 row in table