Recipe for getting an EC2 instance running

Presented by Qing Zhang
What is EC2?

- Elastic Cloud Computing
- Amazon’s cloud computing service
- Dynamically allocate machine
- Virtual machines
  - Xen
- Talk summary: Get an instance running on EC2
Getting Started

- **Ingredients**
  - EC2 account
  - S3 account
  - Firefox
  - Elasticfox
Step 1 Create an account
Generate Certificate

Access Key ID
Use your Access Key ID as the value of the AWSAccessKeyId parameter in requests you send to Amazon Web Services (when required). Your Access Key ID identifies you as the party responsible for the request.

Secret Access Key
Since your Access Key ID is not encrypted in requests to AWS, it could be discovered and used by anyone. Services that are not free require you to provide additional information, a request signature, to verify that a request containing your unique Access Key ID could only have come from you.

You use your Secret Access Key to calculate a signature to include in requests to AWS services that require authenticated requests. To learn more about request signatures, including when to use them and how you calculate them, please refer to the technical documentation for the specific web service(s) you are using.

IMPORTANT: Your Secret Access Key is a secret, and should be known only by you and AWS. You should never include your Secret Access Key in your requests to AWS. You should never e-mail your Secret Access Key to anyone. It is important to keep your Secret Access Key confidential to protect your account.

X.509 Certificate

Certificate File
An X.509 Certificate consists of Public Key and a Private Key. The file containing the public key, the certificate file, must contain a base64-encoded DER certificate body. The file containing the private key, the Private Key file, must contain a base64-encoded PKCS#1 private key. The Private Key is used to authenticate requests to AWS.

AWS accepts any syntactically and cryptographically valid X.509 certificates. They do not need to be from a formal Certificate Authority (CA).

To learn more about how certificates are used to authenticate requests, please see the Developer Guide for services that support X.509 authentication.
ElasticFox

- Launch Elasticfox
  - “Tools” → “Elasticfox”.
ElasticFox will want your credentials
Generate Key Pair

- Click on the “Key Pairs” tab in Elastic Fox.
- 2. Click on the green Key icon at the top of the tab.
Set Security Groups

- Click on the “Security Groups” tab.
Find Instance
Launch an instance

- Right click on the instance you want to connect to, and select the “launch”
Connecting to an Instance
Adding stable storage

- Right click on the instance and select attach EBS Volume
- It will prompt you for a new volume
- Select the size and region
Static IP

- Right click on instance
- Select associate Elastic IP with Instance
Bundling

- Bundling is the process of saving your image to stable storage
- Does not work on Linux under Elasticfox
  - done inside of the VM via command line tools
- Windows right click and “Bundle into and AMI”
Pricing

Pay only for what you use. There is no minimum fee. Estimate your monthly bill using AWS Simple Monthly Calculator.

On-Demand Instances

**United States**

<table>
<thead>
<tr>
<th>Standard On-Demand Instances</th>
<th>Linux/UNIX Usage</th>
<th>Windows Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (Default)</td>
<td>$0.10 per hour</td>
<td>$0.125 per hour</td>
</tr>
<tr>
<td>Large</td>
<td>$0.40 per hour</td>
<td>$0.50 per hour</td>
</tr>
<tr>
<td>Extra Large</td>
<td>$0.80 per hour</td>
<td>$1.00 per hour</td>
</tr>
</tbody>
</table>

**High CPU On-Demand Instances**

<table>
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<tr>
<th>Linux/UNIX Usage</th>
<th>Windows Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>$0.20 per hour</td>
</tr>
<tr>
<td>Extra Large</td>
<td>$0.80 per hour</td>
</tr>
</tbody>
</table>

Pricing is per instance-hour consumed for each instance type, from the time an instance is launched until it is terminated. Each partial instance-hour consumed will be billed as a full hour.

For more information on Windows options including Windows with Authentication Services and Windows SQL Server, please click here.
Reserved Instances

Reserved Instances give you the option to make a low, one-time payment for each instance you want to reserve and in turn receive a significant discount on the hourly usage charge for that instance. After the one-time payment for an instance, that instance is reserved for you, and you have no further obligation; you may choose to run that instance for the discounted usage rate for the duration of your term, or when you do not use the instance, you will not pay usage charges on it.

United States

<table>
<thead>
<tr>
<th>Linux/UNIX</th>
<th>One-time Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Reserved Instances</strong></td>
<td><strong>1 yr Term</strong></td>
</tr>
<tr>
<td>Small (Default)</td>
<td>$325</td>
</tr>
<tr>
<td>Large</td>
<td>$1300</td>
</tr>
<tr>
<td>Extra Large</td>
<td>$2800</td>
</tr>
<tr>
<td><strong>High CPU Reserved Instances</strong></td>
<td><strong>1 yr Term</strong></td>
</tr>
<tr>
<td>Medium</td>
<td>$650</td>
</tr>
<tr>
<td>Extra Large</td>
<td>$2600</td>
</tr>
</tbody>
</table>

Reserved Instances can be purchased for 1 or 3 year terms, and the one-time fee per instance is non-refundable. Usage pricing is per instance-hour consumed. Instance-hours are billed for the time that instances are in a running state; if you do not run the instance in an hour, there is zero usage charge. Partial instance-hours consumed are billed as full hours.
## Pricing

### Data Transfer

#### Internet Data Transfer
The pricing below is based on data transferred "in" and "out" of Amazon EC2.

<table>
<thead>
<tr>
<th>Data Transfer</th>
<th>Price per GB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Transfer In</strong></td>
<td></td>
</tr>
<tr>
<td>All Data Transfer</td>
<td>$0.10</td>
</tr>
<tr>
<td><strong>Data Transfer Out</strong></td>
<td></td>
</tr>
<tr>
<td>First 10 TB per Month</td>
<td>$0.17</td>
</tr>
<tr>
<td>Next 40 TB per Month</td>
<td>$0.13</td>
</tr>
<tr>
<td>Next 100TB per Month</td>
<td>$0.11</td>
</tr>
<tr>
<td>Over 150 TB per Month</td>
<td>$0.10</td>
</tr>
</tbody>
</table>

Data transferred between two Amazon Web Services within the same region (i.e. between Amazon EC2 US and another AWS service in the US, or between Amazon EC2 Europe and another AWS service in Europe) is free of charge (i.e., $0.00 per GB). Data transferred between AWS services in different regions will be charged as Internet Data Transfer on both sides of the transfer.

Usage for other Amazon Web Services is billed separately from Amazon EC2.

#### Availability Zone Data Transfer
- $0.00 per GB – all data transferred between instances in the same Availability Zone using private IP addresses.
Pricing

Amazon Elastic Block Store

United States  Europe

Amazon EBS Volumes
- $0.10 per GB-month of provisioned storage
- $0.10 per 1 million I/O requests

Amazon EBS Snapshots to Amazon S3 (priced the same as Amazon S3)
- $0.15 per GB-month of data stored
- $0.01 per 1,000 PUT requests (when saving a snapshot)
- $0.01 per 10,000 GET requests (when loading a snapshot)

Elastic IP Addresses

No cost for Elastic IP addresses while in use
- $0.01 per non-attached Elastic IP address per complete hour
- $0.00 per Elastic IP address remap – first 100 remaps / month
- $0.10 per Elastic IP address remap – additional remap / month over 100

(Amazon EC2 is sold by Amazon Web Services LLC.)
Restrictions

- Only 20 VMS
  - request form for more instances
Network performance

- **EC2 to the outside world:**
  - about 3 seconds for the test above
  - 30 requests per second
  - transfer rate: about 9Kbytes/sec

- **EC2 to EC2 (separate instance):**
  - 0.8 seconds for test
  - 1135 requests per second
  - 329 Kbps

- **dreamhost.com:**
  - about 1 second for the test
  - 86 requests per second
  - transfer rate: about 34Kbytes/sec

- **dreamhost to dreamhost (same account running ab from shell):**
  - about 0.2 seconds for the test
  - 470 requests per sec
  - 179 Kbytes/sec transfer
Networking speeds

high volume web site hosting is most definitely one of our target markets, so yes, you can assume that we will provide sufficient bandwidth for that class of application. Having said that, we are very aware that we're not there yet, and are working on setting this right.
Questions