Web 3

You know what?

That course name isn’t good enough.

Web 3000

Let’s do some damage.

Today’s Agenda!

- WTF: Syllabus reviewed and expectations set.
- LOL: Chat it up. Ask me anything.
- OMG: Do something you [probably] don’t know how to do.

WTF

LOL

OMG

Today’s Impossible Thing

Build your own server from scratch.
No GoDaddy allowed.

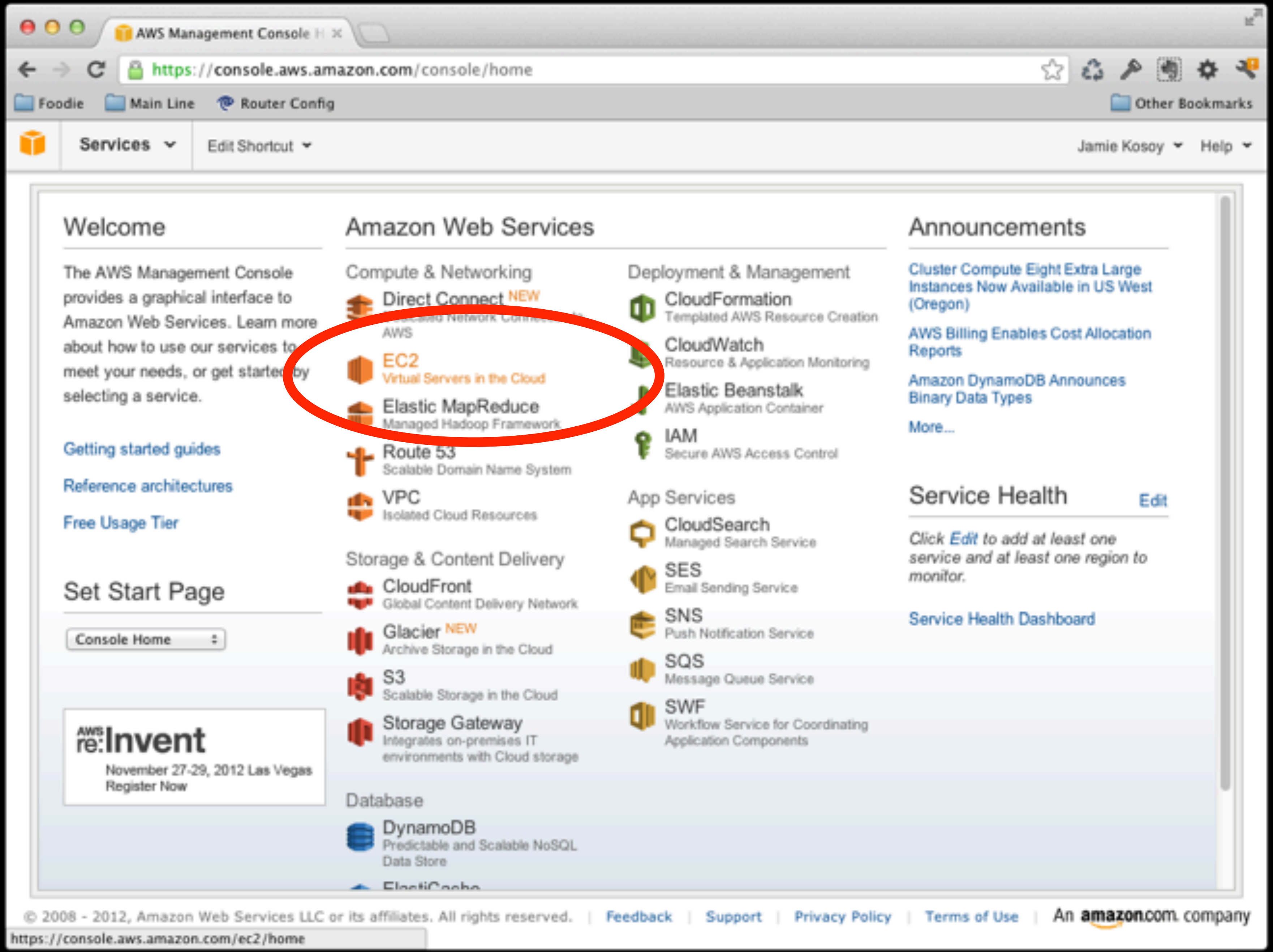
Amazon Web Services

AWS vocab!

- EC2 = Elastic Cloud Computing. Basically a computer in the cloud.
- S3 = Simple Storage Service. Basically a hard drive in the cloud.
- Everything Else = We'll deal with it on a case by case basis.

Step 1

Sign up for Amazon and log into the portal.



Welcome

The AWS Management Console provides a graphical interface to Amazon Web Services. Learn more about how to use our services to meet your needs, or get started by selecting a service.

Getting started guides

Reference architectures

Free Usage Tier

Set Start Page

Console Home

AWS re:Invent
November 27-29, 2012 Las Vegas
Register Now

Amazon Web Services

Compute & Networking

- Direct Connect NEW
  Dedicated Network Connection to AWS
- EC2
  Virtual Servers in the Cloud
- Elastic MapReduce
  Managed Hadoop Framework
- Route 53
  Scalable Domain Name System
- VPC
  Isolated Cloud Resources

Storage & Content Delivery

- CloudFront
  Global Content Delivery Network
- Glacier NEW
  Archive Storage in the Cloud
- S3
  Scalable Storage in the Cloud
- Storage Gateway
  Integrates on-premises IT environments with Cloud storage

Database

- DynamoDB
  Predictable and Scalable NoSQL Data Store
- ElastiCache

Deployment & Management

- CloudFormation
  Templated AWS Resource Creation
- CloudWatch
  Resource & Application Monitoring
- Elastic Beanstalk
  AWS Application Container
- IAM
  Secure AWS Access Control

App Services

- CloudSearch
  Managed Search Service
- SES
  Email Sending Service
- SNS
  Push Notification Service
- SQS
  Message Queue Service
- SWF
  Workflow Service for Coordinating Application Components

Announcements

Cluster Compute Eight Extra Large Instances Now Available in US West (Oregon)

AWS Billing Enables Cost Allocation Reports

Amazon DynamoDB Announces Binary Data Types

More...

Service Health

Edit

Click Edit to add at least one service and at least one region to monitor.

Service Health Dashboard

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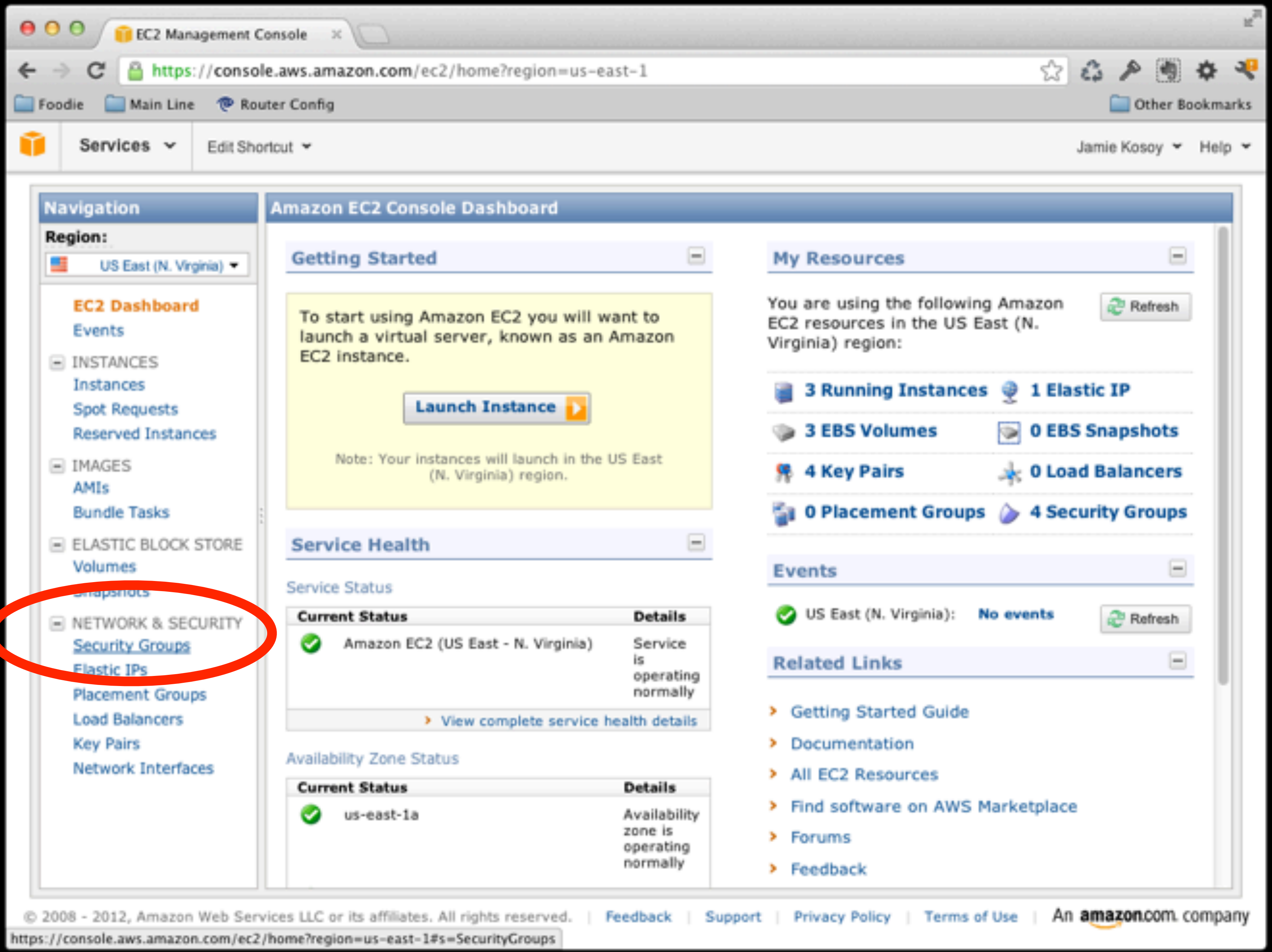
https://console.aws.amazon.com/ec2/home

Step 2: Click EC2



Amazon EC2 Console Dashboard

Getting Started

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

Note: Your instances will launch in the US East (N. Virginia) region.

Service Health

Service Status

Current Status	Details
Amazon EC2 (US East - N. Virginia)	Service is operating normally

› View complete service health details

Availability Zone Status

Current Status	Details
us-east-1a	Availability zone is operating normally

My Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) region:

3 Running Instances	1 Elastic IP
3 EBS Volumes	0 EBS Snapshots
4 Key Pairs	0 Load Balancers
0 Placement Groups	4 Security Groups

Events

US East (N. Virginia): No events

Related Links

- Getting Started Guide
- Documentation
- All EC2 Resources
- Find software on AWS Marketplace
- Forums
- Feedback

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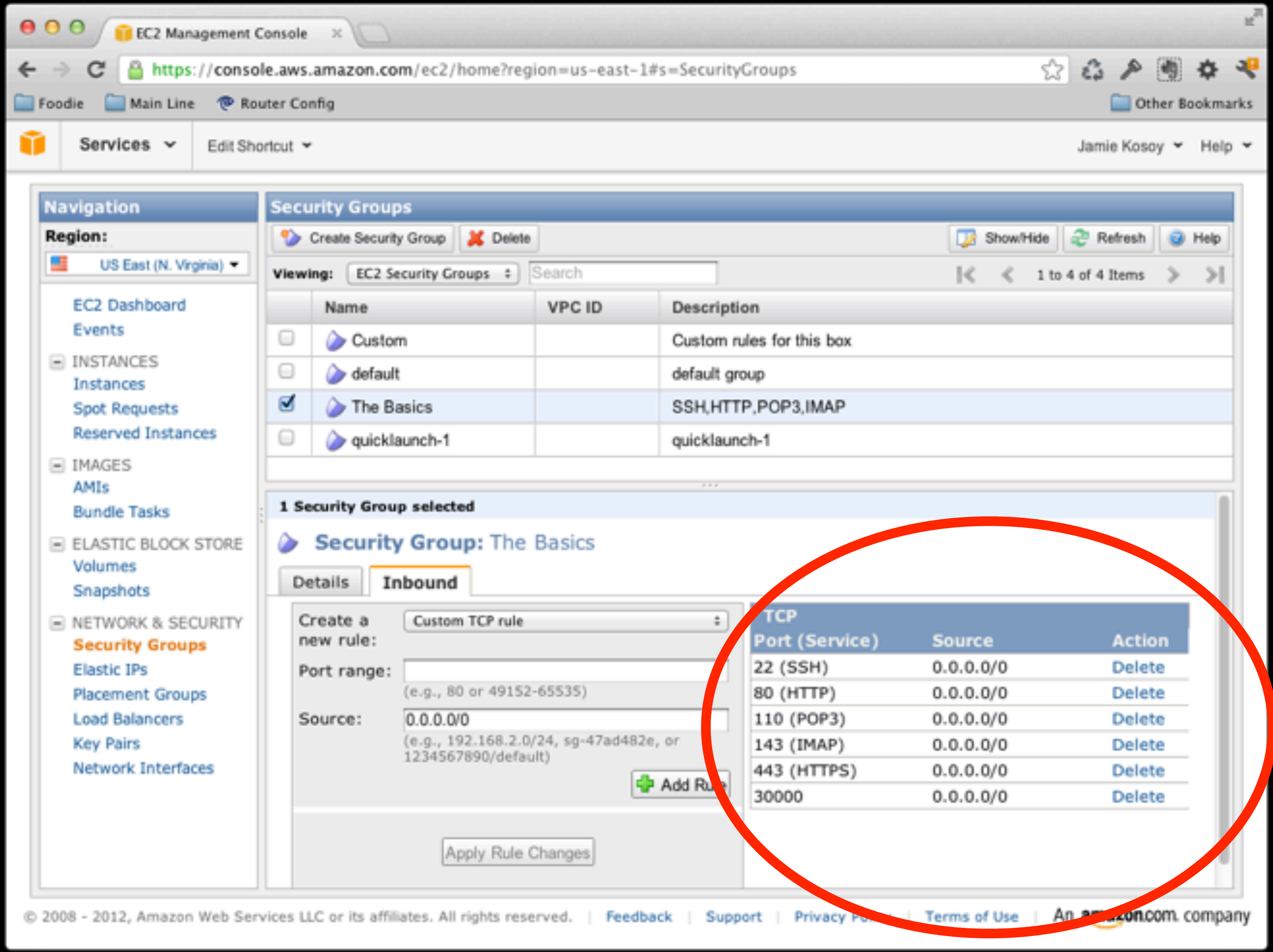
https://console.aws.amazon.com/ec2/home?region=us-east-1#s=SecurityGroups

Step 3: Security Groups

(wait, wtf is a security group)



Navigation

Region: US East (N. Virginia)

- EC2 Dashboard
- Events
- INSTANCES
  - Instances
  - Spot Requests
  - Reserved Instances
- IMAGES
  - AMIs
  - Bundle Tasks
- ELASTIC BLOCK STORE
  - Volumes
  - Snapshots
- NETWORK & SECURITY
  - Security Groups
  - Elastic IPs
  - Placement Groups
  - Load Balancers
  - Key Pairs
  - Network Interfaces

Security Groups

Viewing: EC2 Security Groups Search 1 to 4 of 4 Items

	Name	VPC ID	Description
□	Custom		Custom rules for this box
□	default		default group
☑	The Basics		SSH,HTTP,POP3,IMAP
□	quicklaunch-1		quicklaunch-1

1 Security Group selected

Security Group: The Basics

Create a new rule: Custom TCP rule

Port range: (e.g., 80 or 49152-65535)

Source: 0.0.0.0/0 (e.g., 192.168.2.0/24, sg-47ad482e, or 1234567890/default)

TCP

Port (Service)	Source	Action
22 (SSH)	0.0.0.0/0	Delete
80 (HTTP)	0.0.0.0/0	Delete
110 (POP3)	0.0.0.0/0	Delete
143 (IMAP)	0.0.0.0/0	Delete
443 (HTTPS)	0.0.0.0/0	Delete
30000	0.0.0.0/0	Delete

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Step 4: Make a group like this

Make sure to click
“Apply Rule Changes”

Step 6

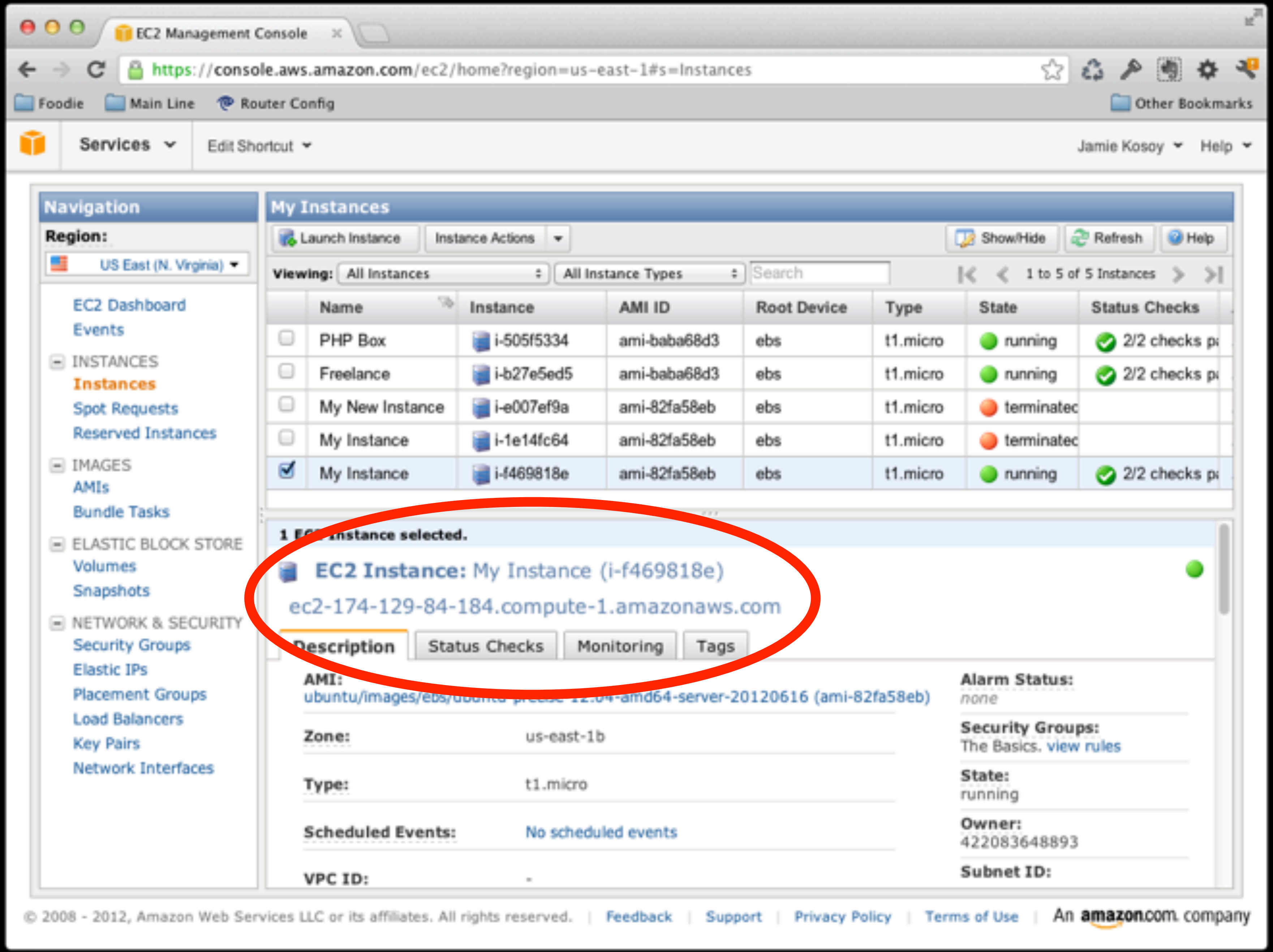
Click Instances. I’m not giving you a screenshot for this one. C’mon.

Step...
wait what step are we on?

- Launch an instance by clicking the “Launch Instance” button
  - Choose Quick Launch Wizard.
  - Name your instance.
  - Create a new “Key Pair”. Name it whatever and download it.
  - Set the server to “Ubuntu Server 12.04 LTS”, 64-bit (my

Steps 37 through 152

- Click “Edit Details” on the next screen.
- Click “Security Groups”
    - Remember when we made that security group? Yeah, click that.
- Save, Launch.



EC2 Management Console

https://console.aws.amazon.com/ec2/home?region=us-east-1#s=Instances

Foodie | Main Line | Router Config | Other Bookmarks

Services ▾ | Edit Shortcut ▾ | Jamie Kosoy ▾ | Help ▾

Navigation

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My Instances

Launch Instance | Instance Actions ▾ | Show/Hide | Refresh | Help

Viewing: All Instances | All Instance Types | Search | 1 to 5 of 5 Instances

	Name	Instance	AMI ID	Root Device	Type	State	Status Checks
□	PHP Box	i-505f5334	ami-baba68d3	ebs	t1.micro	● running	✓ 2/2 checks pa
□	Freelance	i-b27e5ed5	ami-baba68d3	ebs	t1.micro	● running	✓ 2/2 checks pa
□	My New Instance	i-e007ef9a	ami-82fa58eb	ebs	t1.micro	● terminatec	
□	My Instance	i-1e14fc64	ami-82fa58eb	ebs	t1.micro	● terminatec	
☑	My Instance	i-f469818e	ami-82fa58eb	ebs	t1.micro	● running	✓ 2/2 checks pa

1 EC2 Instance selected.

EC2 Instance: My Instance (i-f469818e)

ec2-174-129-84-184.compute-1.amazonaws.com

Description | Status Checks | Monitoring | Tags

AMI: ubuntu/images/ebs/ubuntu-precise-12.04-amd64-server-20120616 (ami-82fa58eb)

Zone: us-east-1b

Type: t1.micro

Scheduled Events: No scheduled events

VPC ID: -

Alarm Status: none

Security Groups: The Basics. view rules

State: running

Owner: 422083648893

Subnet ID:

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Copy your *whatever*.amazonaws.com

Connect to your server

We need to open Terminal.app for this.
Windows users – Putty and WinSCP – http://bit.ly/1YXodh

Fix your key pair.

```
chmod 0600 ~/Downloads/yourKey.pem
```

Log into the box

```
ssh ubuntu@whatever.amazonaws.com –i ~/Downloads/yourKey.pem
```

Breaking that down

- ssh = log into the server but on the command line. Think FTP.
- ubuntu@whatever.amazonaws.com = username@address.com
  - ubuntu is automatic default username for a new EC2 Ubuntu server.
- -i ~/Downloads/yourKey.pem = identity file argument

You are now remotely in.

Your command line is connected to your EC2 server.
Until you disconnect (Ctrl+D) you are on that machine.

Pro Tip: Update!

```
sudo apt-get update
sudo apt-get upgrade
```

Always do this whenever you launch a new instance.

apt-get

An Ubuntu “package manager”. Install stuff on your server super fast.

Let’s install Apache.

Apache is web server software.
It’s like Finder for the WWW. It’s the engine behind > 100 million web sites.

Type this

```
sudo apt-get install apache2
```

(then click Enter when prompted)

(that’s it)

What you just did:

- sudo = super user “do”. sudo means that the computer is your bitch.
  - You need permission to sudo. In this case Amazon pre-configured it.
- apt-get = the command line program to run, our package manager
- install = what we want the program to do. Bet you can guess this one.

Install some more stuff

- sudo apt-get install mysql-server mysql-client
- sudo apt-get install mongodb
- sudo apt-get install php5 php5-dev libapache2-mod-php5 php5-curl php5-gd php5-idn php-pear php5-imagick php5-imap php5-mcrypt php5-memcache php5-ps php5-pspell php5-recode php5-snmp php5-tidy php5-xmlrpc php5-xsl php5-common
- (steal that last one: http://www.giantflyingsaucer.com/

Having fun yet?

Don’t know the name of a package?

Google “apt-get install [name of thing you’re trying to install]”
That’s about all I know.

Let’s test out your server.

Go to

http://whatever.amazonaws.com

Yaaaaaaaaaayyyyy!

Now let’s set up SFTP.

First we need credentials.

```
sudo useradd -m [username]
sudo passwd [username]
```

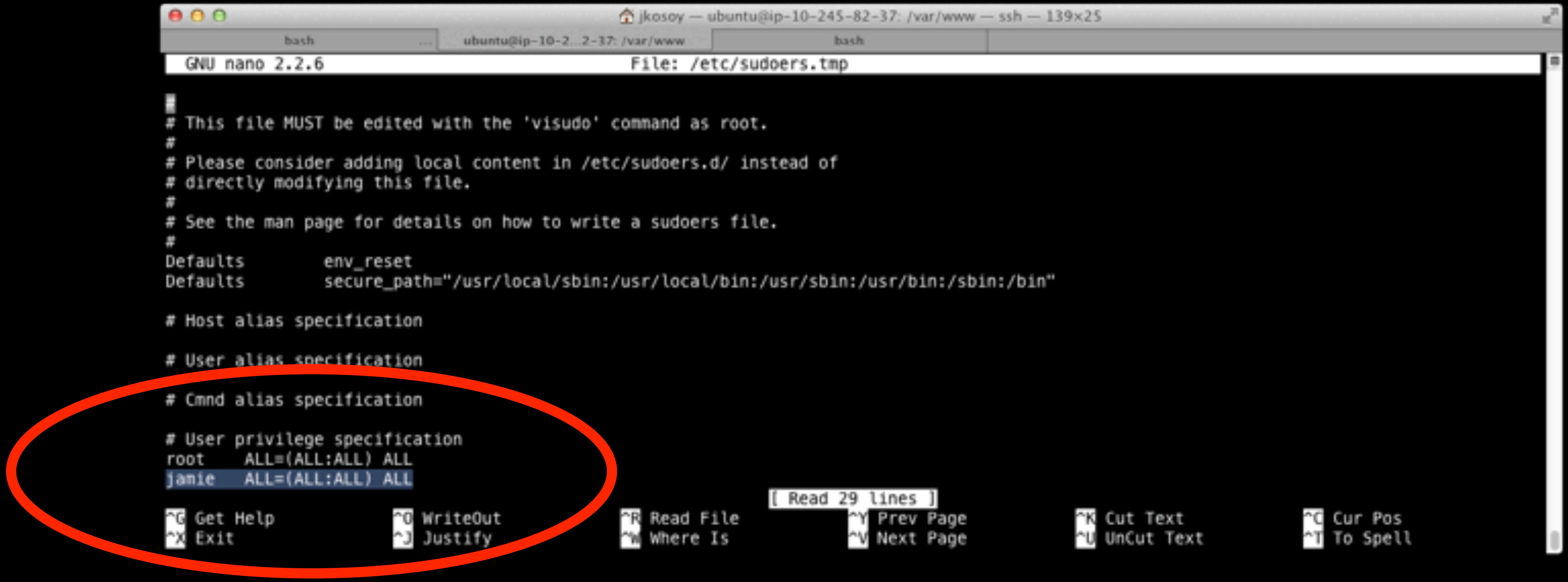
-m creates a home directory for that user.
You’ll need to enter the password twice. It won’t show up on the screen.

Give yourself sudo access.

```
sudo visudo
```

vi

A Command Line Text Editor


jkosoy — ubuntu@ip-10-245-82-37: /var/www — ssh — 139×25
bash
ubuntu@ip-10-2...2-37: /var/www
bash

```
  GNU nano 2.2.6                                    File: /etc/sudoers.tmp

#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults        env_reset
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL
jamie   ALL=(ALL:ALL) ALL
                                                          [ Read 29 lines ]
^G Get Help          ^O WriteOut          ^R Read File         ^Y Prev Page         ^K Cut Text          ^C Cur Pos
^X Exit              ^J Justify           ^W Where Is          ^V Next Page         ^U UnCut Text        ^T To Spell
```

Add your username under root

Save and Quit

Ctrl+O
Ctrl+X

Test it out

```
su yourName
(enter password)
sudo ls
(enter password again)
```

Edit SSHD settings

- sudo vi /etc/ssh/sshd_config
  - Type “i” to begin editing. (i as in insert)
  - Set port from 22 to 30000. This is for security.
    - PermitRootLogin should be no
    - PasswordAuthentication should be yes
  - Hit ESC.
  - Type “:wq” to save and quit.

Restart SSH

```
sudo /etc/init.d/ssh restart
```

(aside)

You can restart lots of services with this.
Whenever you change a config file you probably need a restart.

For example:

One last thing...

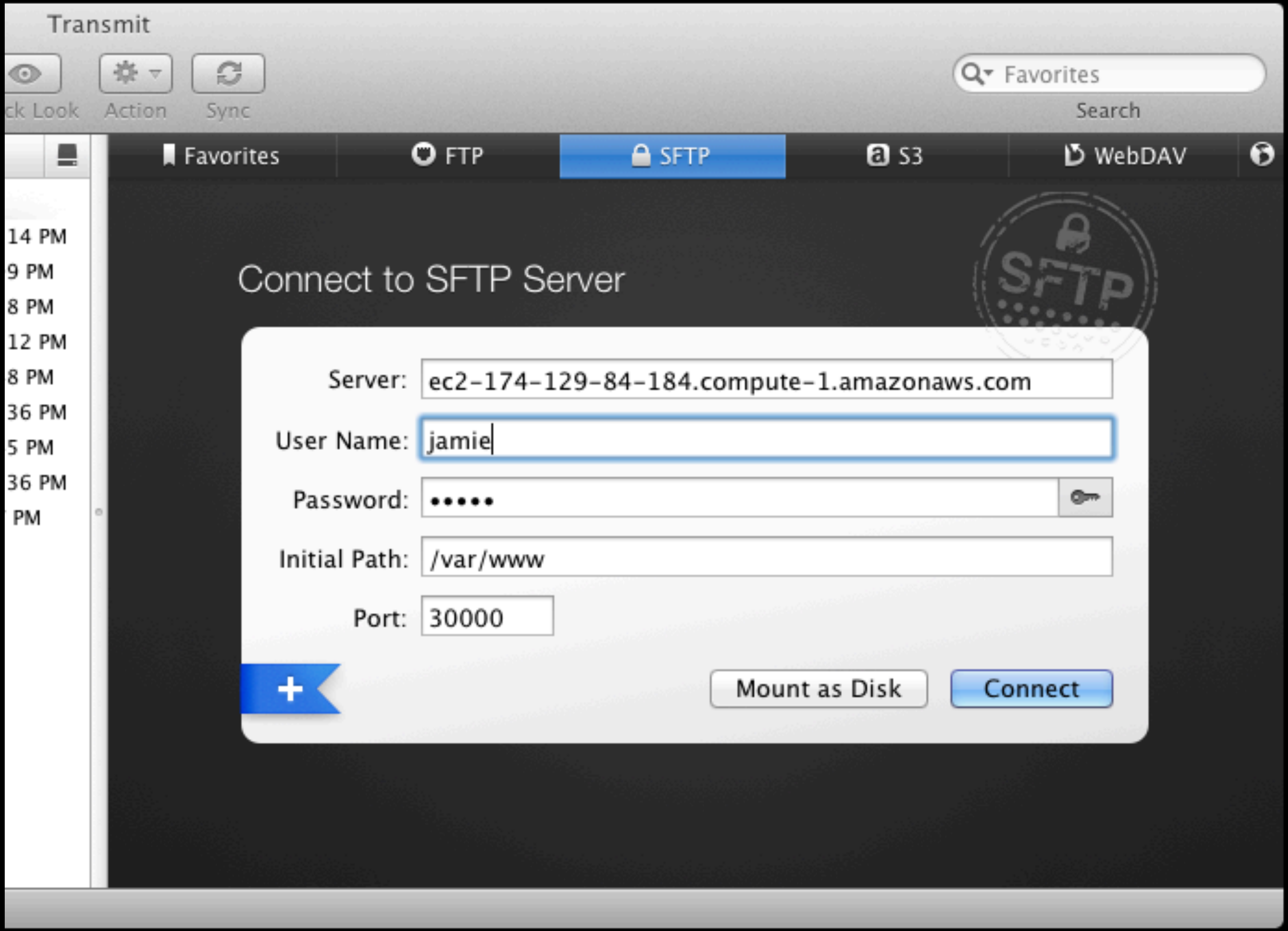
Set up the WWW directory so we can edit it.

Create a group

```
sudo groupadd webadmin
sudo usermod -a -G webadmin [yourname]
sudo usermod -a -G webadmin root
```

Edit the WWW directory

```
sudo chown -R root:webadmin /var/www
sudo chmod -R 775 /var/www
```



Connect to SFTP Server

Server: ec2-174-129-84-184.compute-1.amazonaws.com

User Name: jamie

Password: •••••

Initial Path: /var/www

Port: 30000

Log In!

Holy Wow

You did it. You built a server from scratch.
(Specifically a LAMP stack.)

Linux Commands

- ls = list files
- ls -la = list files a little bit more organized
- cd /path/to/directory = change directory
  - Use tab to autocomplete.
- mkdir dir = make a directory
- chmod permissions dirOrFile = change the read/write permissions. complicated.
- chown user:group dirOrFile = change the owner of a file. also complicated
- Ctrl+D or Ctrl+C usually quits something. I always forget which is which.
- Apple+T creates new tabs. Useful for having one remote connection and one local.

Common vi Commands

- i = insert. once in insert mode type as normal.
  - (aside: Larry Tessler invented Word Processing because he hated vi)
- ESC = done inserting
- :q! = quit without saving
- :wq = save and quit

Advanced Tinkerings

- Ruby is a very popular platform these days. Perhaps install that?
- Or perhaps you want an all JavaScript solution. NodeJS + MongoDB.
- I know some of you are Django and Python nuts. Go on... Google it. You know you want to.
- Linux geek and hate Ubuntu? That’s fine. Use another flavor. You won’t hurt my feelings.

For next week

- Terminate your server and rebuild it from scratch. Practice makes perfect.
    - If you screw up you can always terminate and restart. If that even costs you a penny I’d be shocked.
- Build and deploy a small web site that takes some part of this deck and translates it into HTML, CSS and JavaScript. Hit me with your best shot.

Questions?