Amazon EC2: Using AWS to host your web app

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February 22, 2013

Amazon Web Services

- Set of infrastructure and application services that let you run things in the cloud
  - Websites and mobile apps
  - Big data projects
  - Enterprise applications

EC2: Elastic Compute Cloud

- The computing part of AWS
- "Rent" virtual computers
- Create, launch and terminate as needed
- Buy computing power by the hour, bandwidth by the GB, space by GB/month
  - Amazon offers a "free tier" for your first 12 months
  - http://aws.amazon.com/free/

Benefits of EC2/Cloud Computing

- Let someone else manage the hardware and bandwidth
- Only pay for what you use
  - Rapidly scale up or down
  - Automatic scaling based on demand
- Get up and running in minutes

EC2 Micro Instances

- 613 MB memory
- Up to 2 EC2 compute units (for short periodic bursts)
  - Provide a small amount of consistent CPU resources and allow you to increase it in short bursts when additional cycles are available
- 32-bit or 64-bit platform
- Linux or Windows
- I/O performance: low

- Eligible for free tier pricing!
  - $0.02 an hour after first year
  - Free or near-free way to learn your way around EC2

AMI: Amazon Machine Image

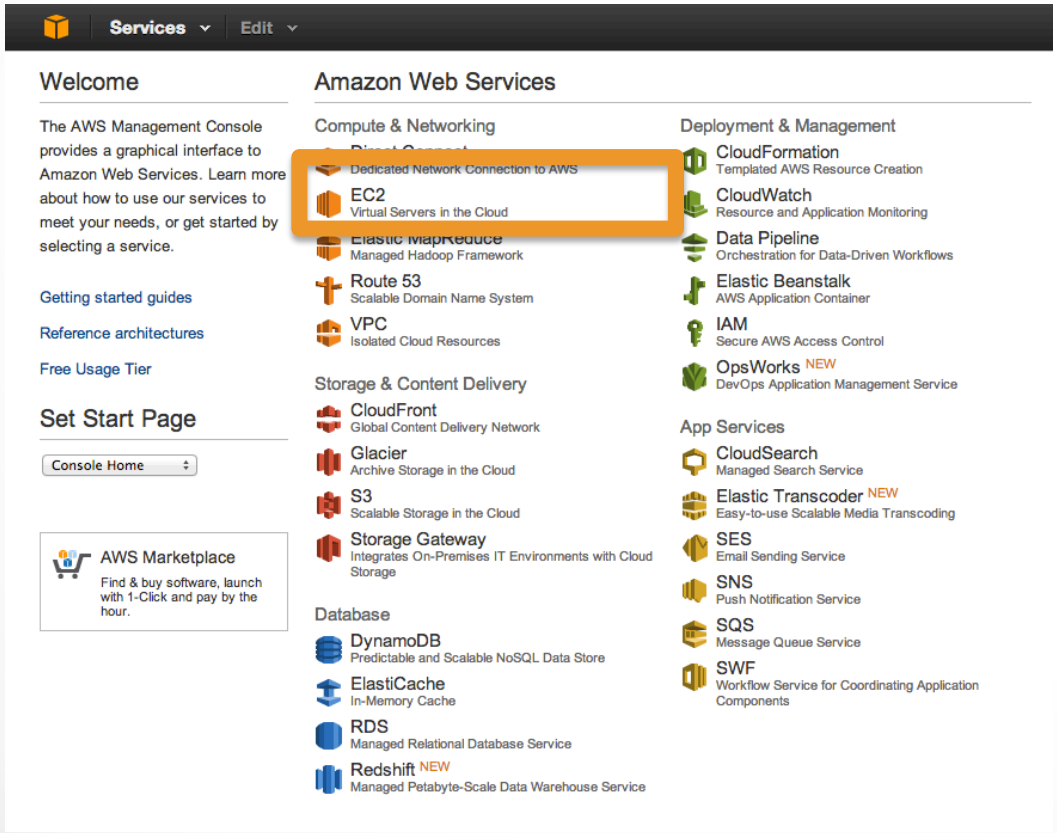
- A virtual machine with chosen OS and apps bundled together
- Create AMIs from scratch or choose from hundreds of public AMIs
- For this class, we have created an AMI (columbia-dste-class-image)
  - Includes php, mysql, apache, django already installed on an Ubuntu OS
  - Feel free to experiment with other AMIs too!

Demo!

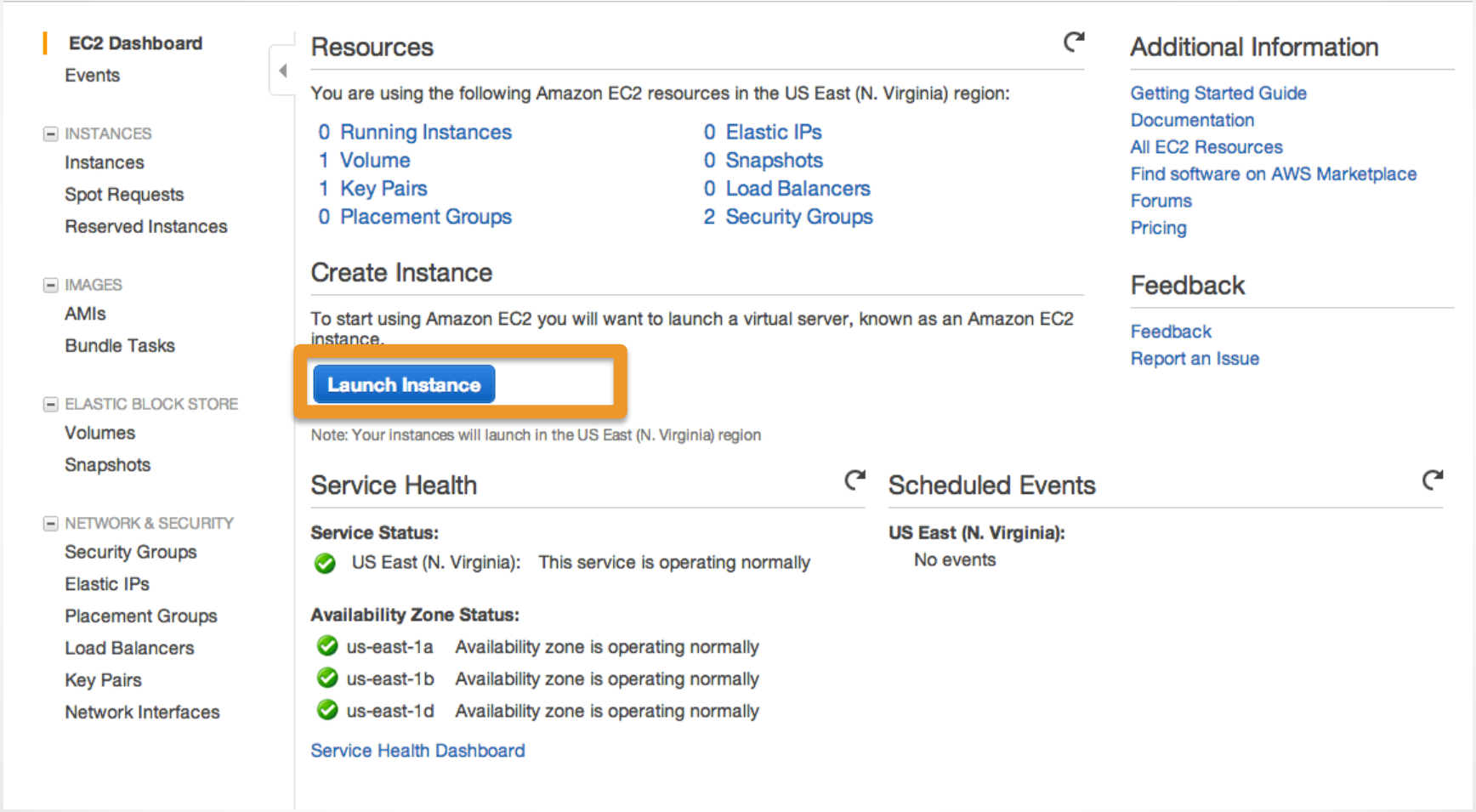
- Create a micro instance using DSTE AMI
- Start it up
- Login
- Access the new server in the web browser
- Create an Elastic IP

Access EC2 dashboard

- AWS management console:
  - https://console.aws.amazon.com/console/home
  - Click on EC2

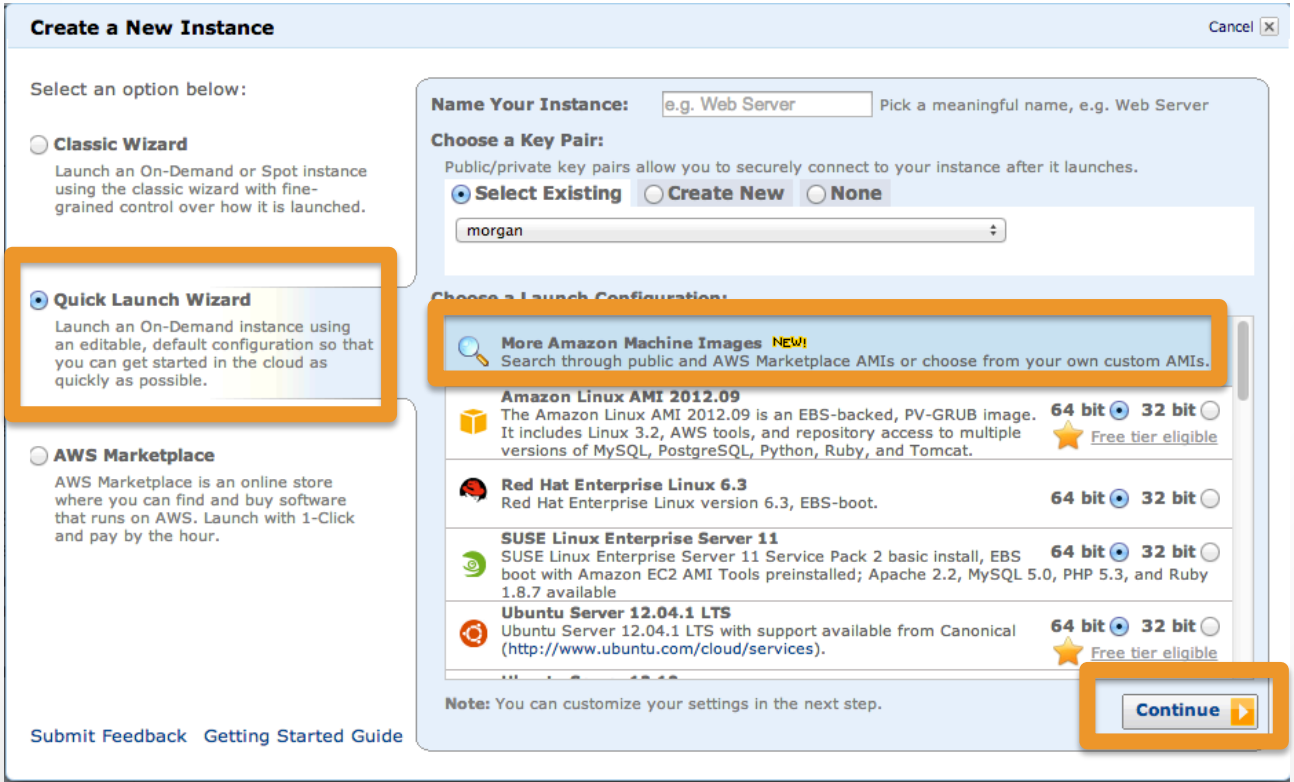


Launch a new instance



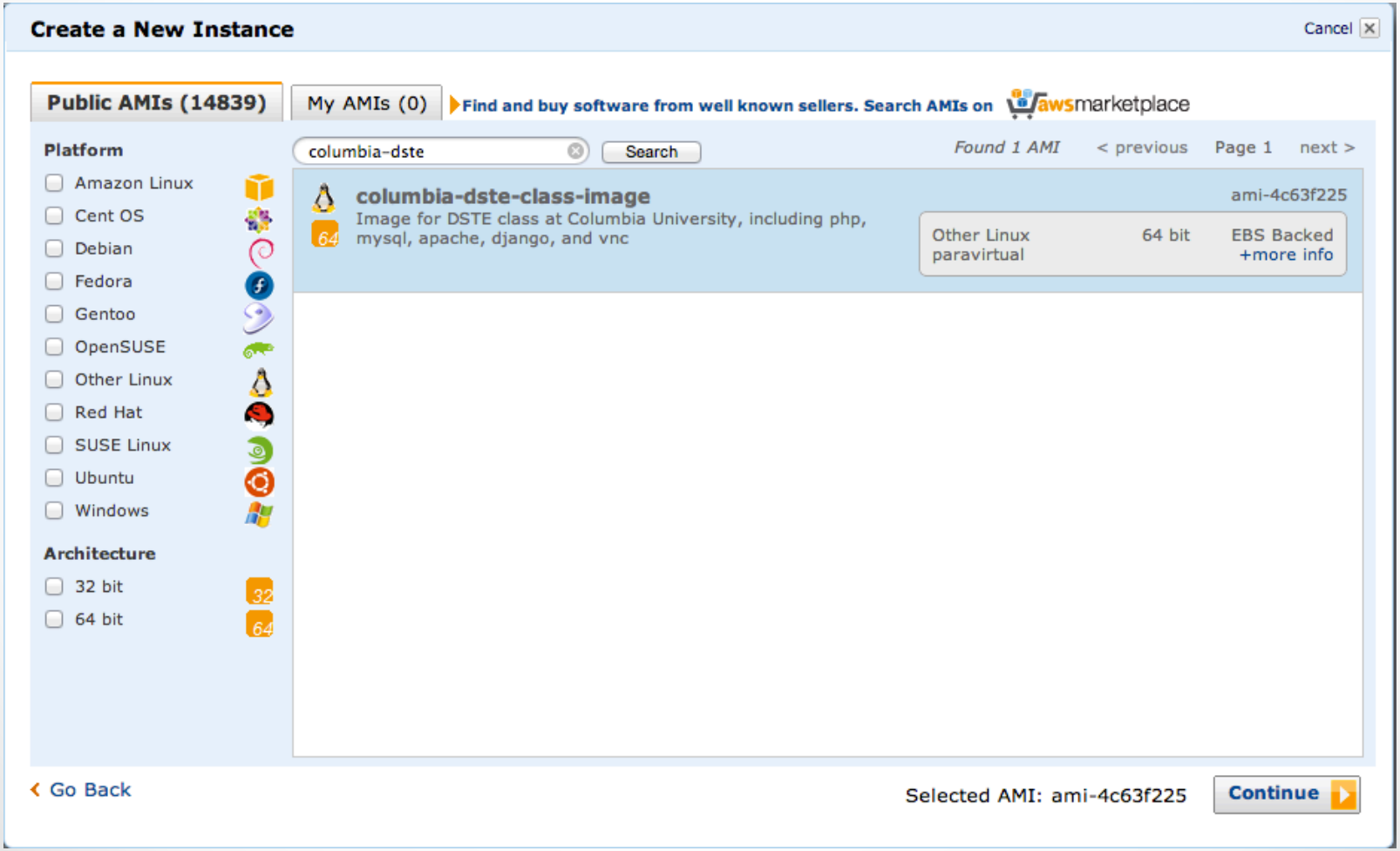
Create a new instance

- Use Quick Launch wizard
- Create a new key pair and download or select existing
  - Make sure the permissions are set properly on the downloaded private key
  - Read-only access for you, no access for others (chmod 400)
- Select "More Amazon Machine Images"

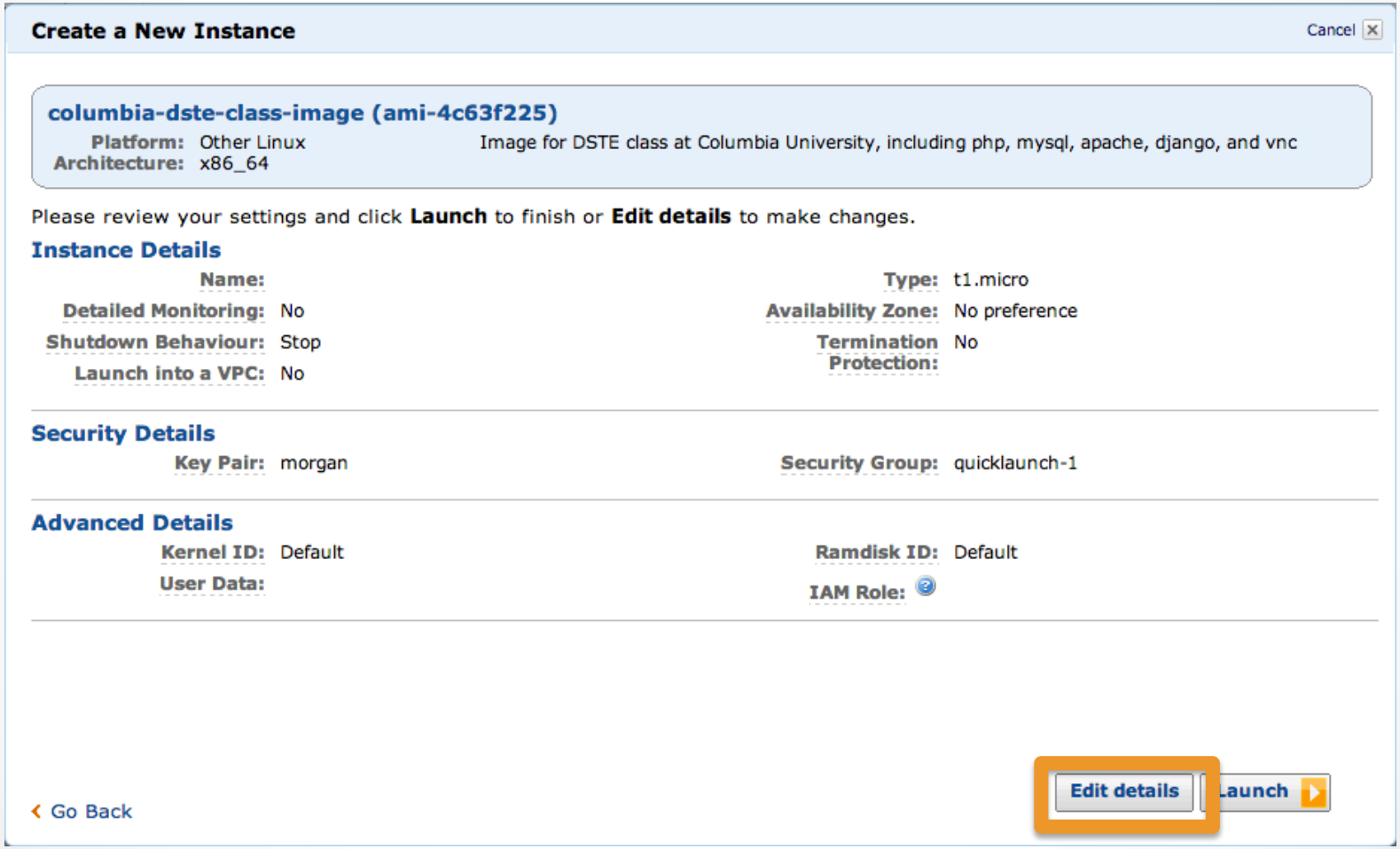


Select AMI

- Search for and select columbia-dste-class-image

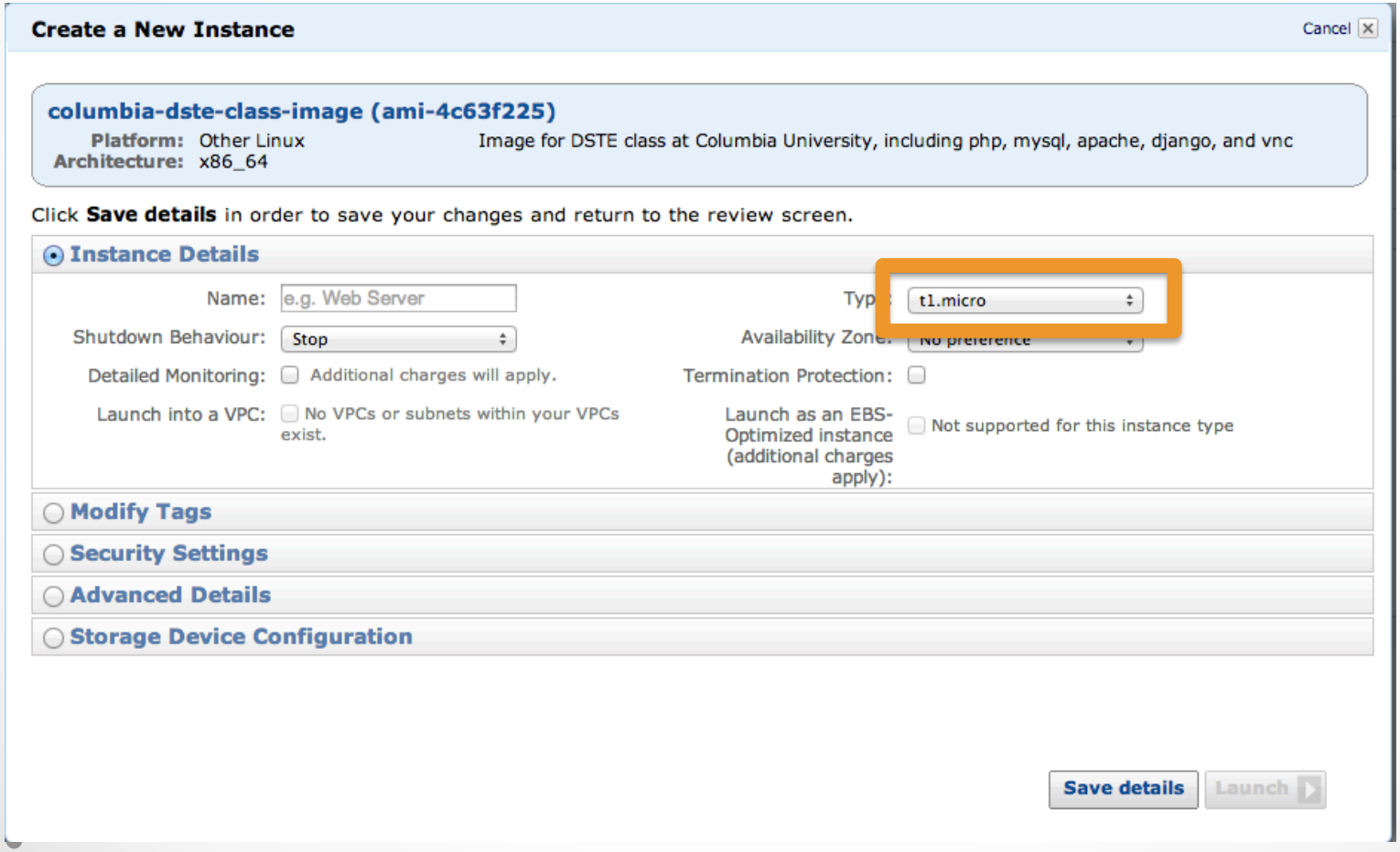


Edit details



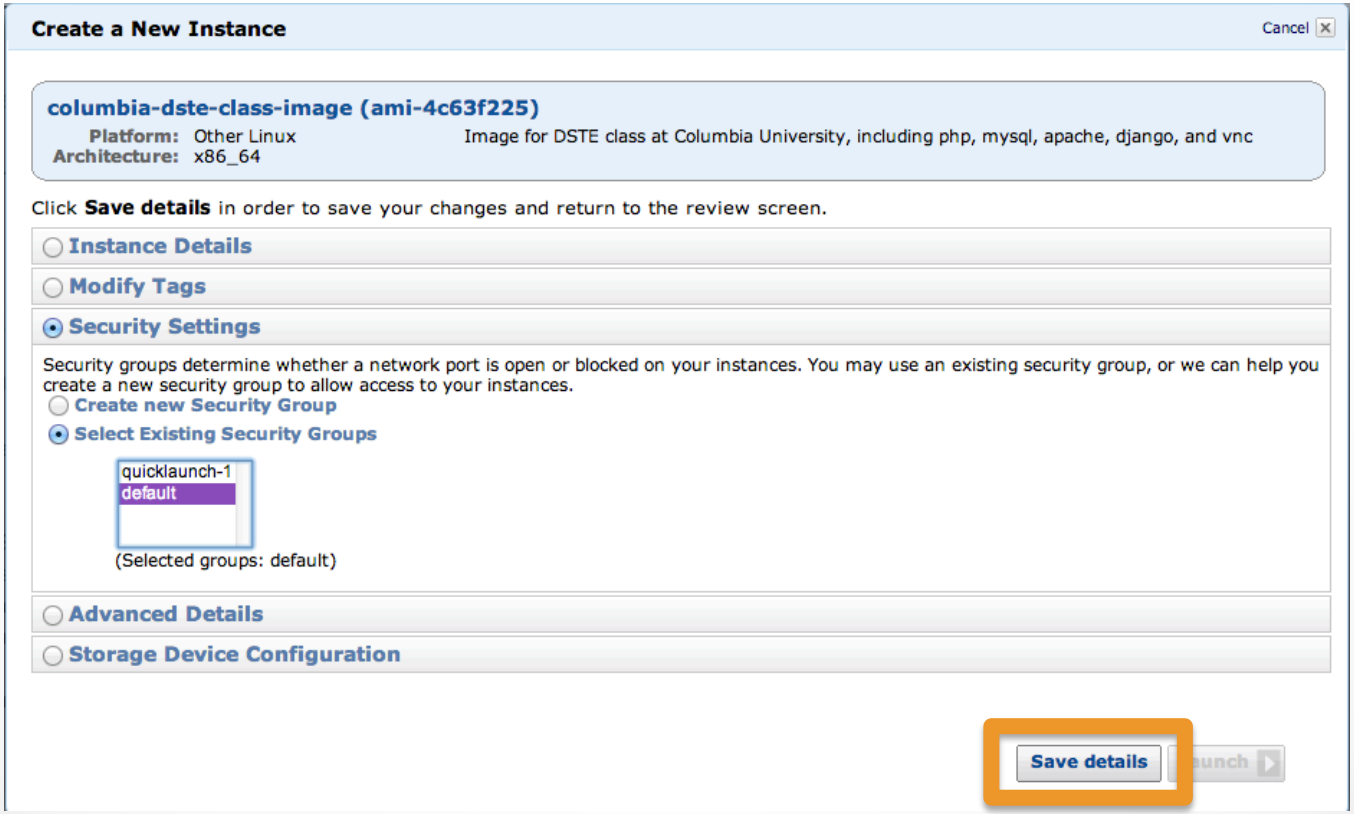
Select instance type

- Make sure type is set to micro

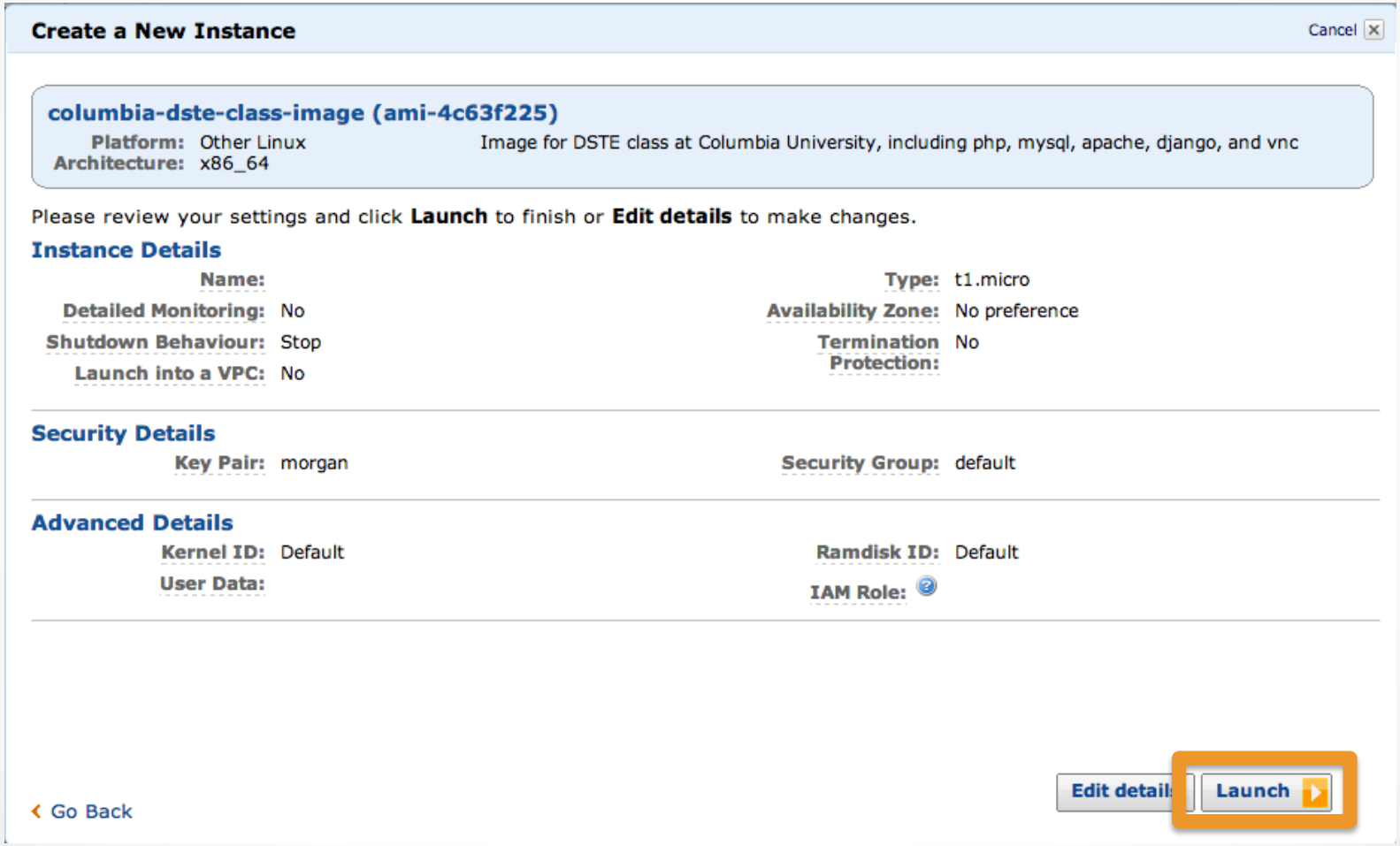


Edit security group

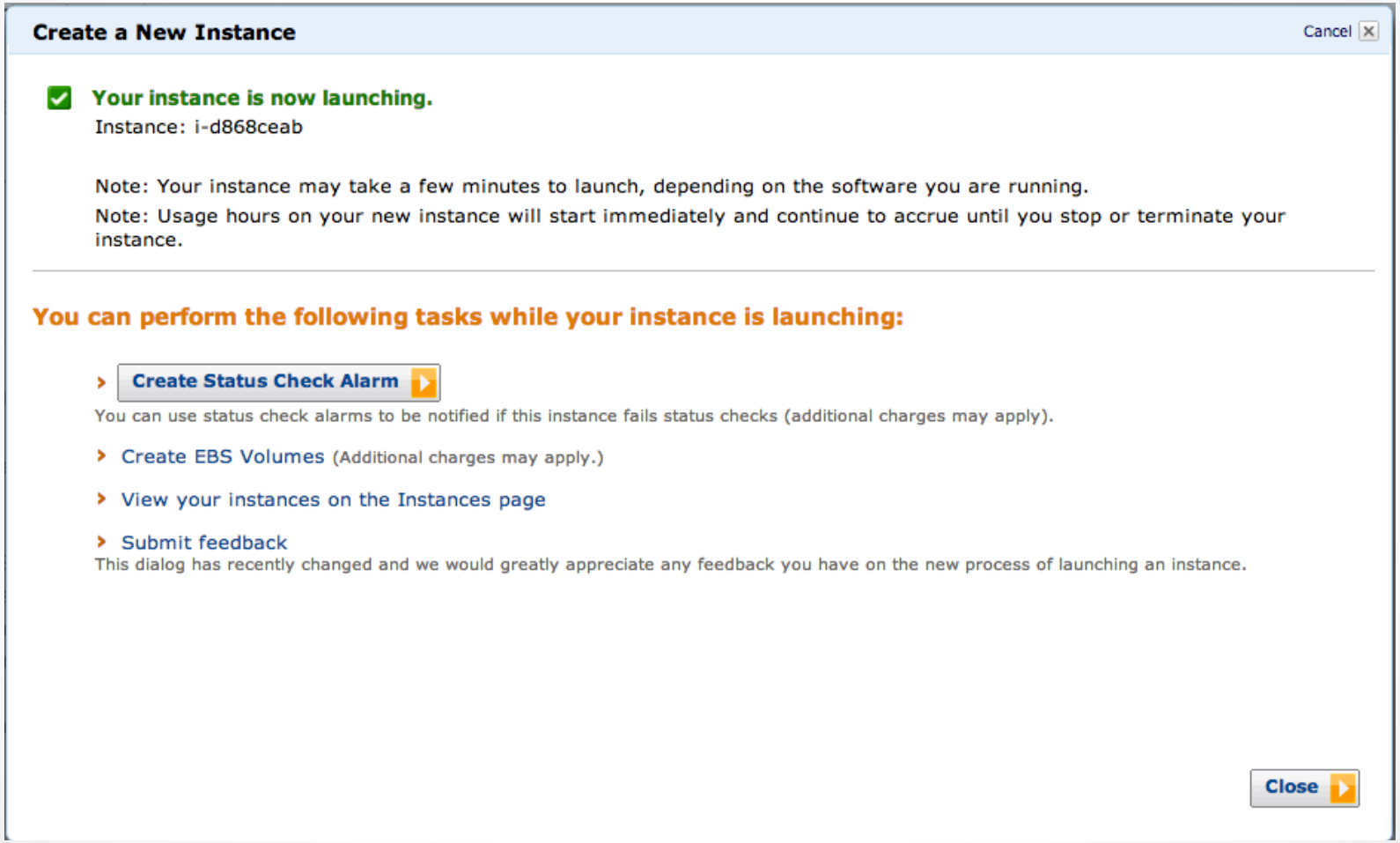
- Select security settings
- Select a group that allows HTTP and SSH access or create a new one



Launch!

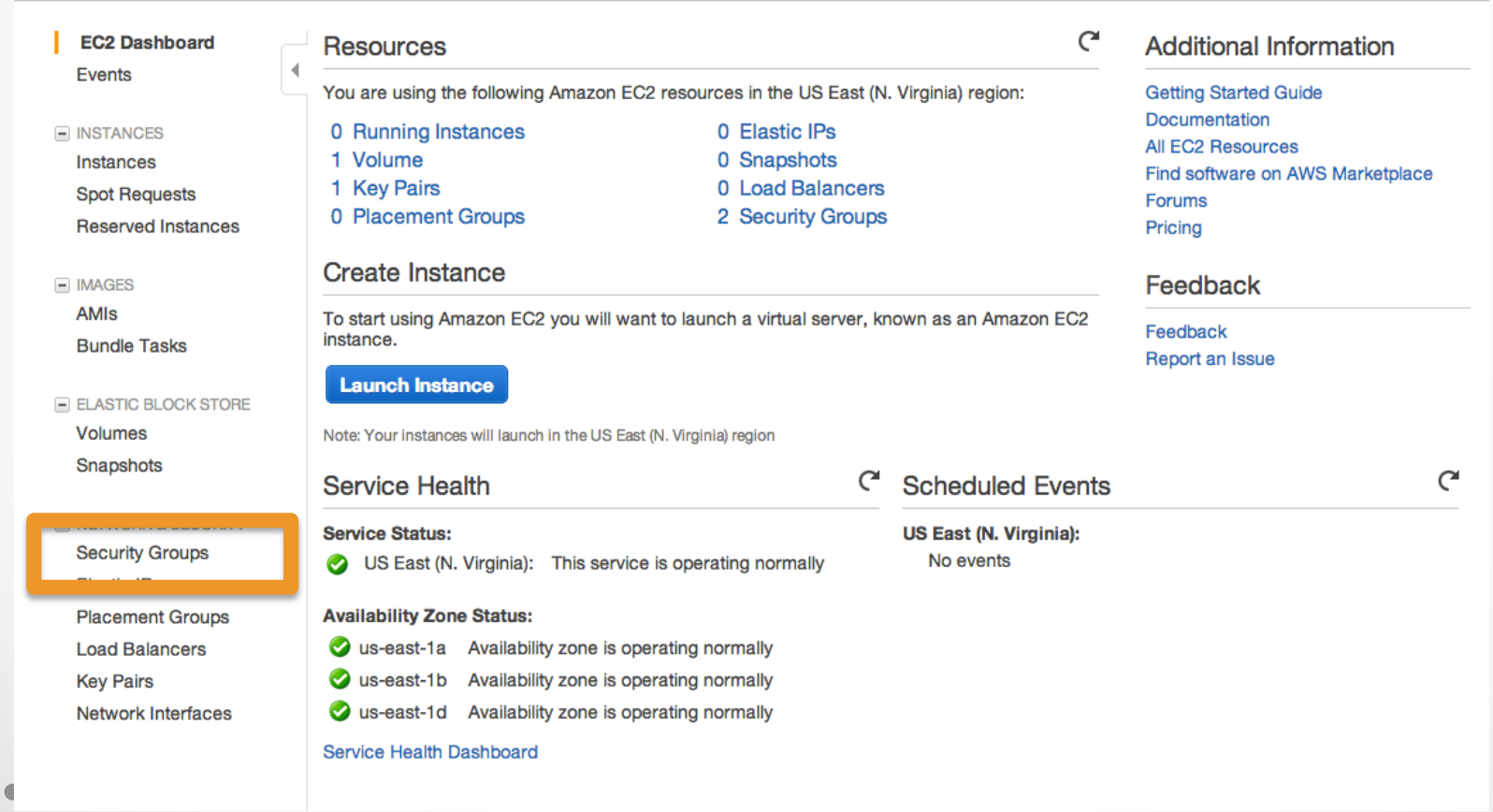

Create a New Instance
Cancel
columbia-dste-class-image (ami-4c63f225)
Platform: Other Linux
Architecture: x86_64
Image for DSTE class at Columbia University, including php, mysql, apache, django, and vnc
Please review your settings and click Launch to finish or Edit details to make changes.
Instance Details
Name:
Type: t1.micro
Detailed Monitoring: No
Availability Zone: No preference
Shutdown Behaviour: Stop
Termination Protection: No
Launch into a VPC: No
Security Details
Key Pair: morgan
Security Group: default
Advanced Details
Kernel ID: Default
Ramdisk ID: Default
User Data:
IAM Role:
Go Back
Edit details
Launch

Launch!


Create a New Instance
Cancel
Your instance is now launching.
Instance: i-d868ceab
Note: Your instance may take a few minutes to launch, depending on the software you are running.
Note: Usage hours on your new instance will start immediately and continue to accrue until you stop or terminate your instance.
You can perform the following tasks while your instance is launching:
Create Status Check Alarm
You can use status check alarms to be notified if this instance fails status checks (additional charges may apply).
Create EBS Volumes (Additional charges may apply.)
View your instances on the Instances page
Submit feedback
This dialog has recently changed and we would greatly appreciate any feedback you have on the new process of launching an instance.
Close

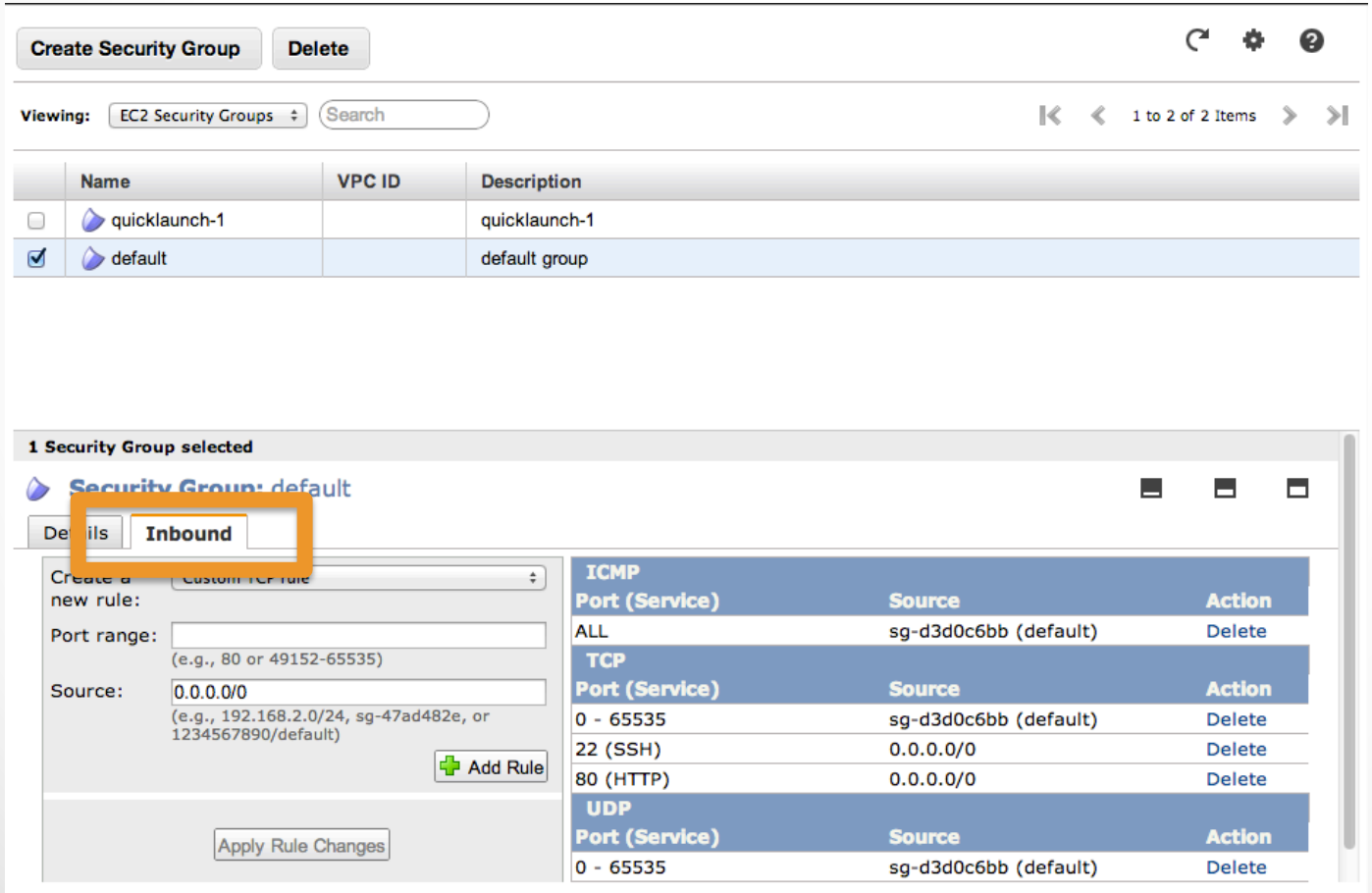
Editing security groups

- We need a group that allows for HTTP and SSH access



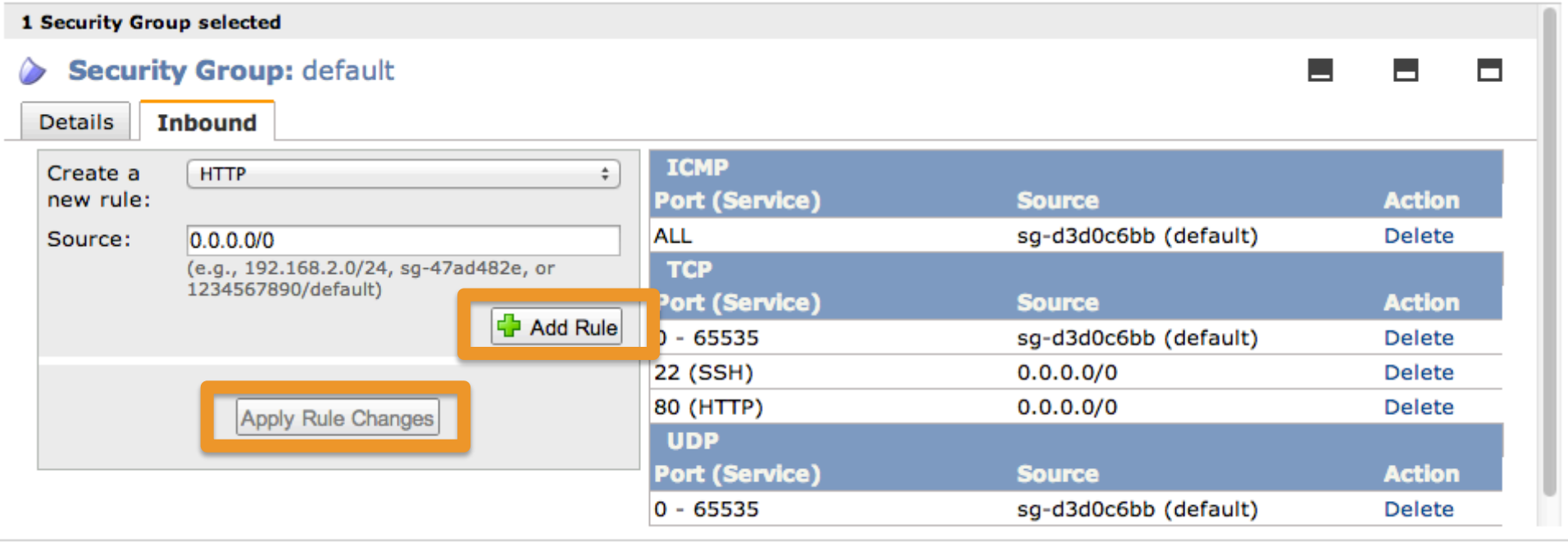
Editing security groups

- Create a new group or edit default group
- Select group and select Inbound tab

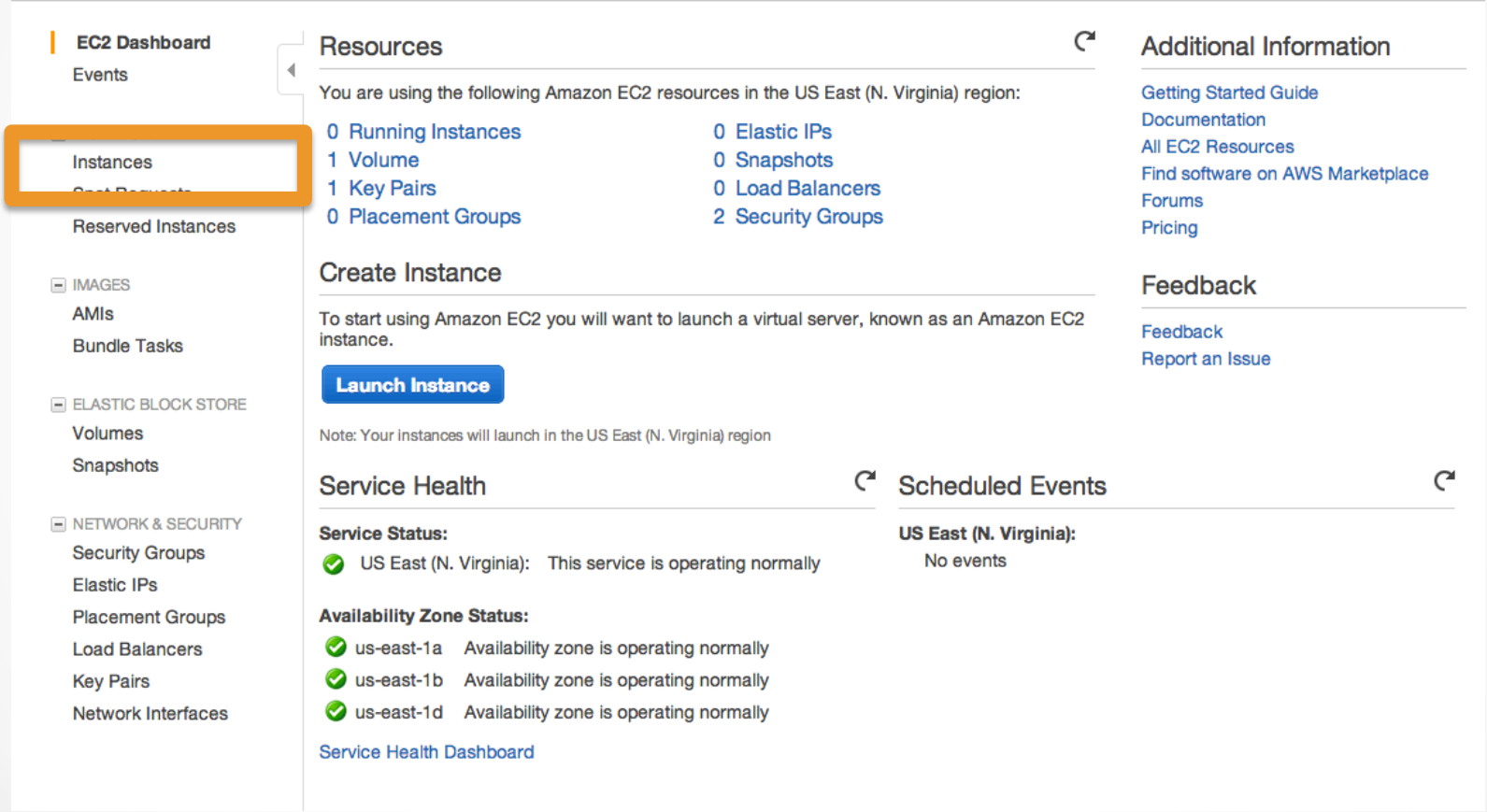


Editing security groups

- Create new rules for HTTP and SSH
  - Source: 0.0.0.0/0
  - Remember to apply changes!

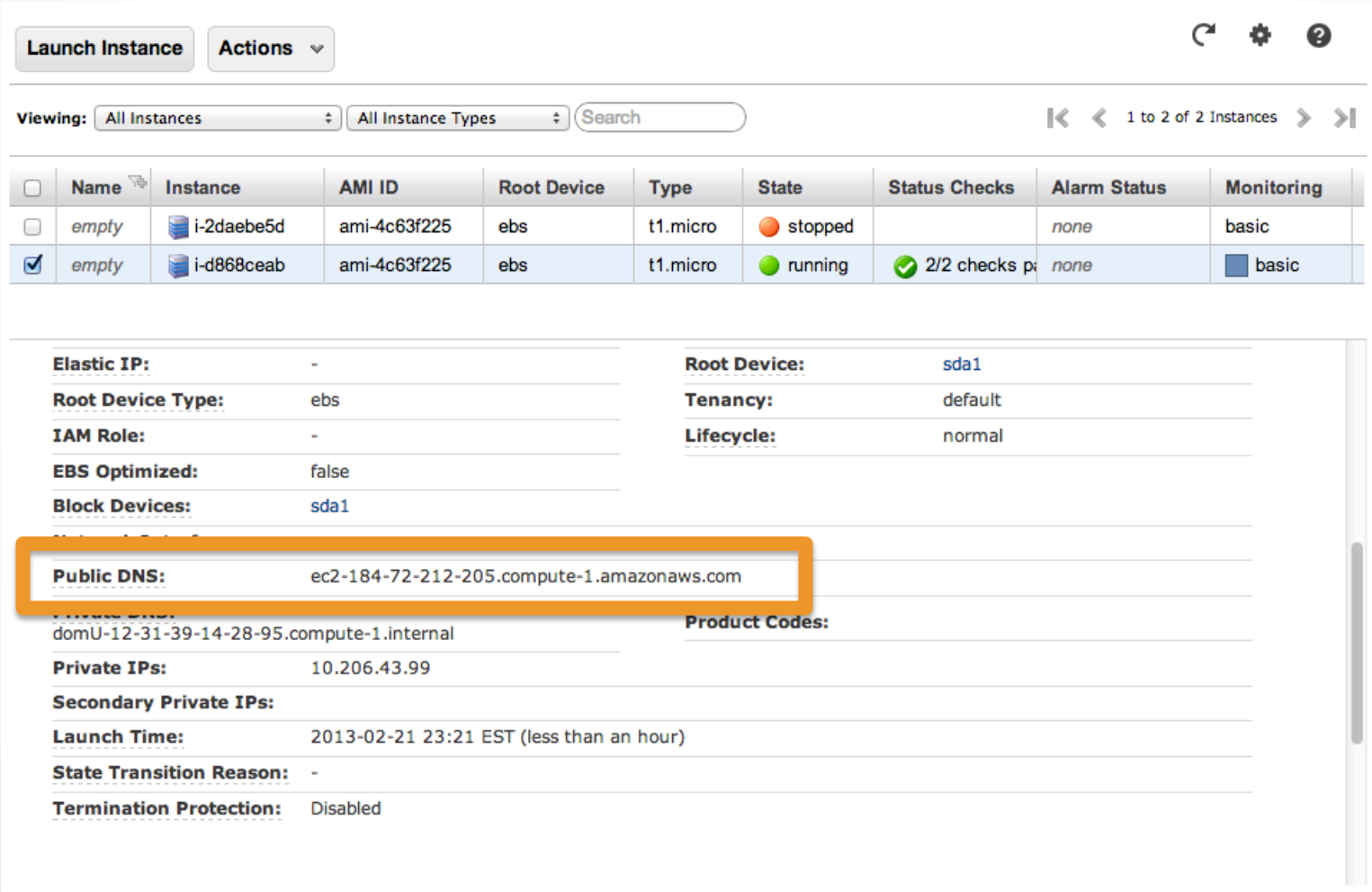


View your instances



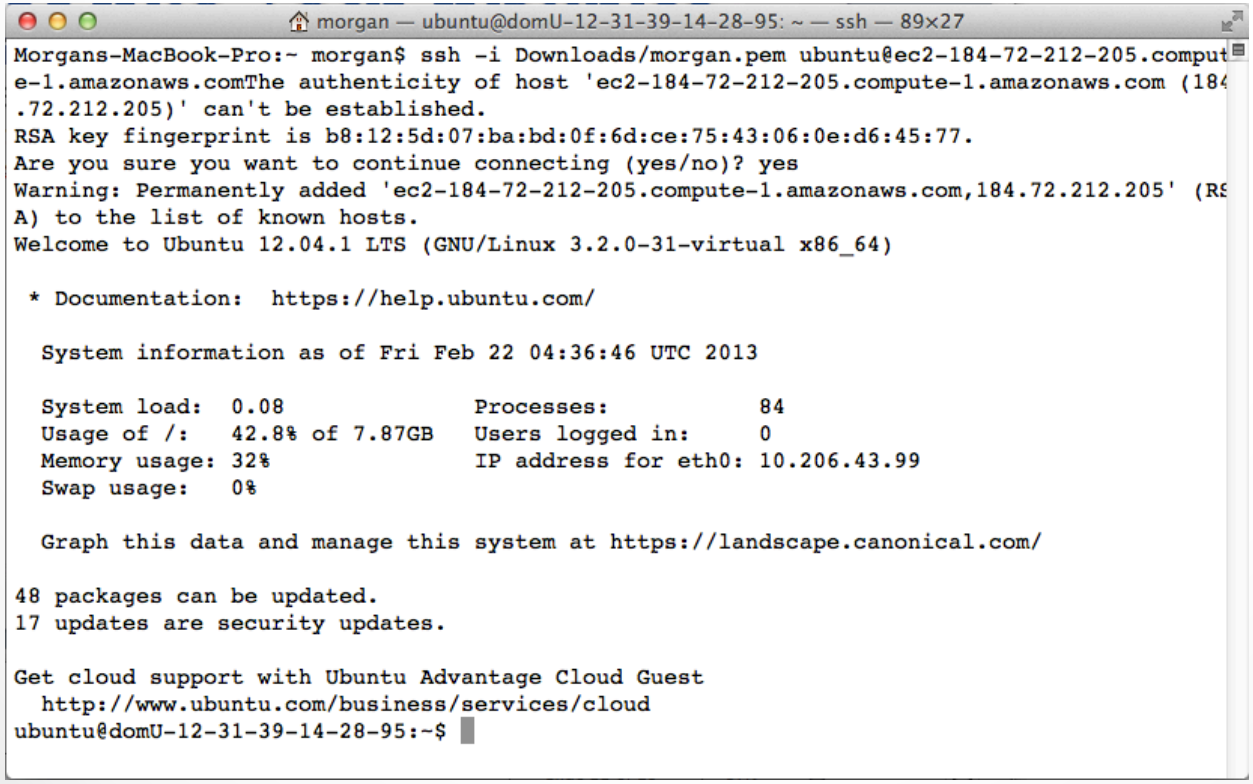
View instance details

- Find public DNS



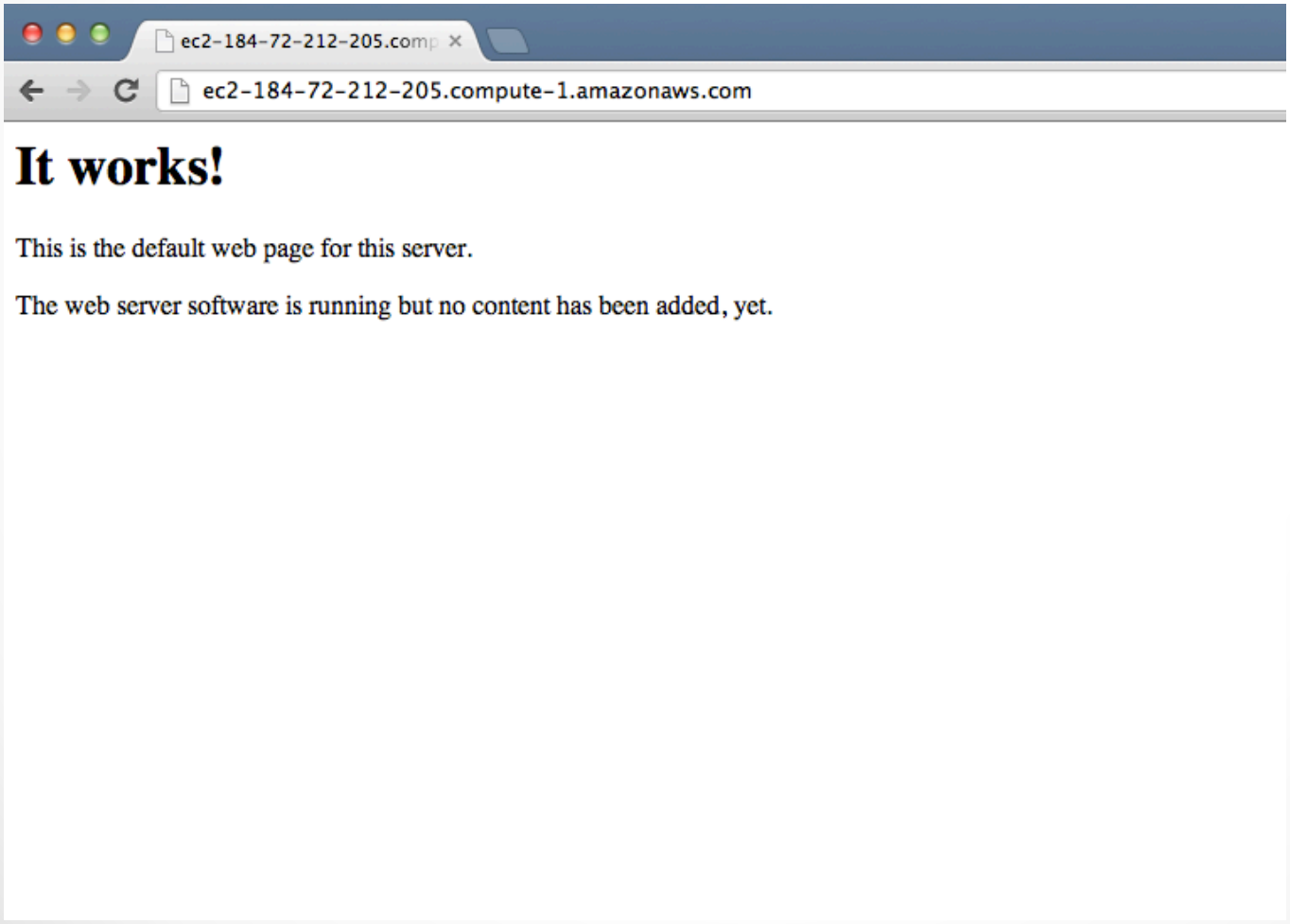
Log in to your instance

- SSH using the public DNS, username ubuntu and the private key you downloaded
  - ssh –i your_key.pem ubuntu@public_dns
  - E.g.: ssh –i morgan.pem ubuntu@ec2-184-72-212-205.compute-1.amazonaws.com



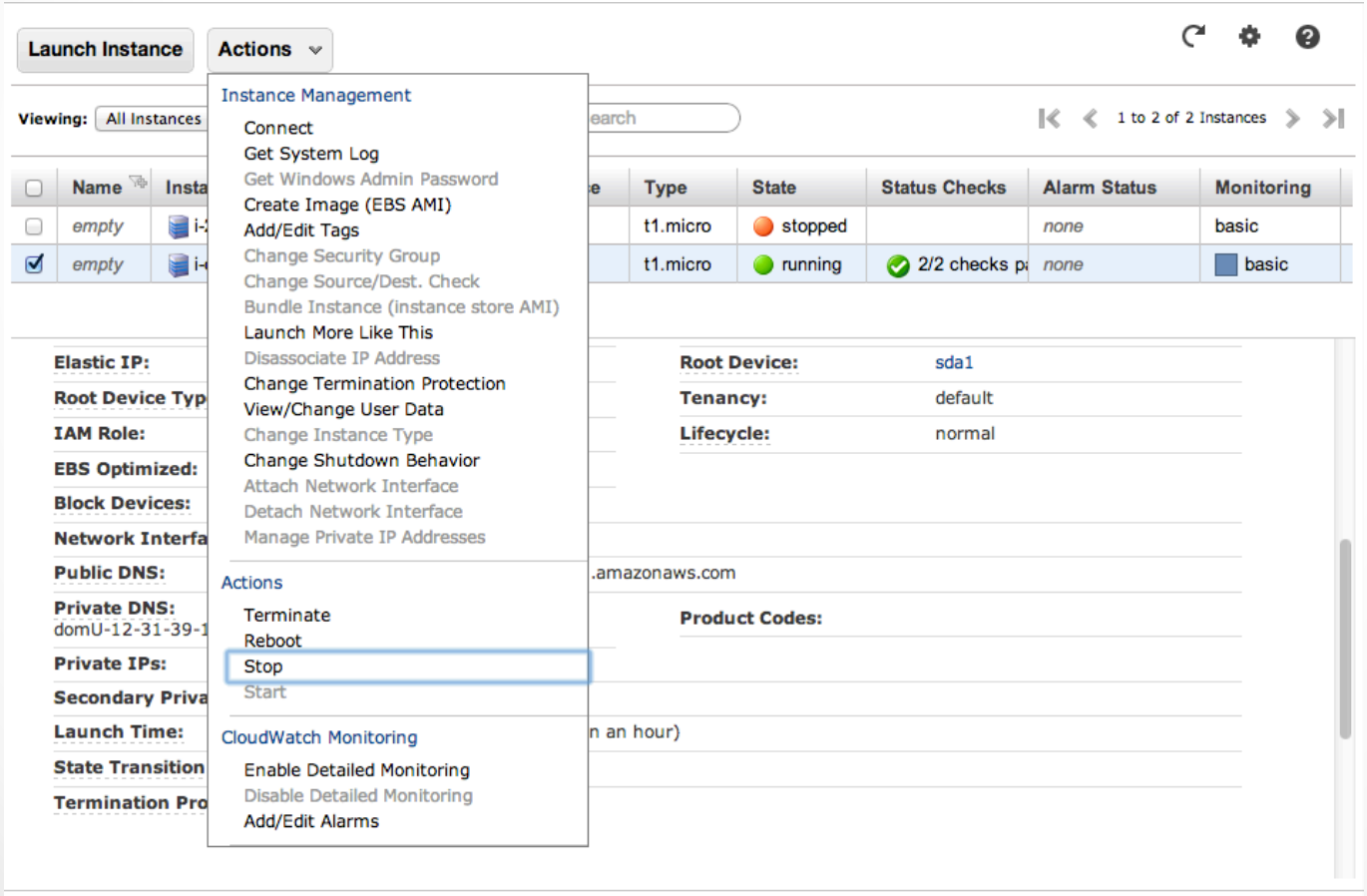
Access server in web browser

- Type public DNS into address bar



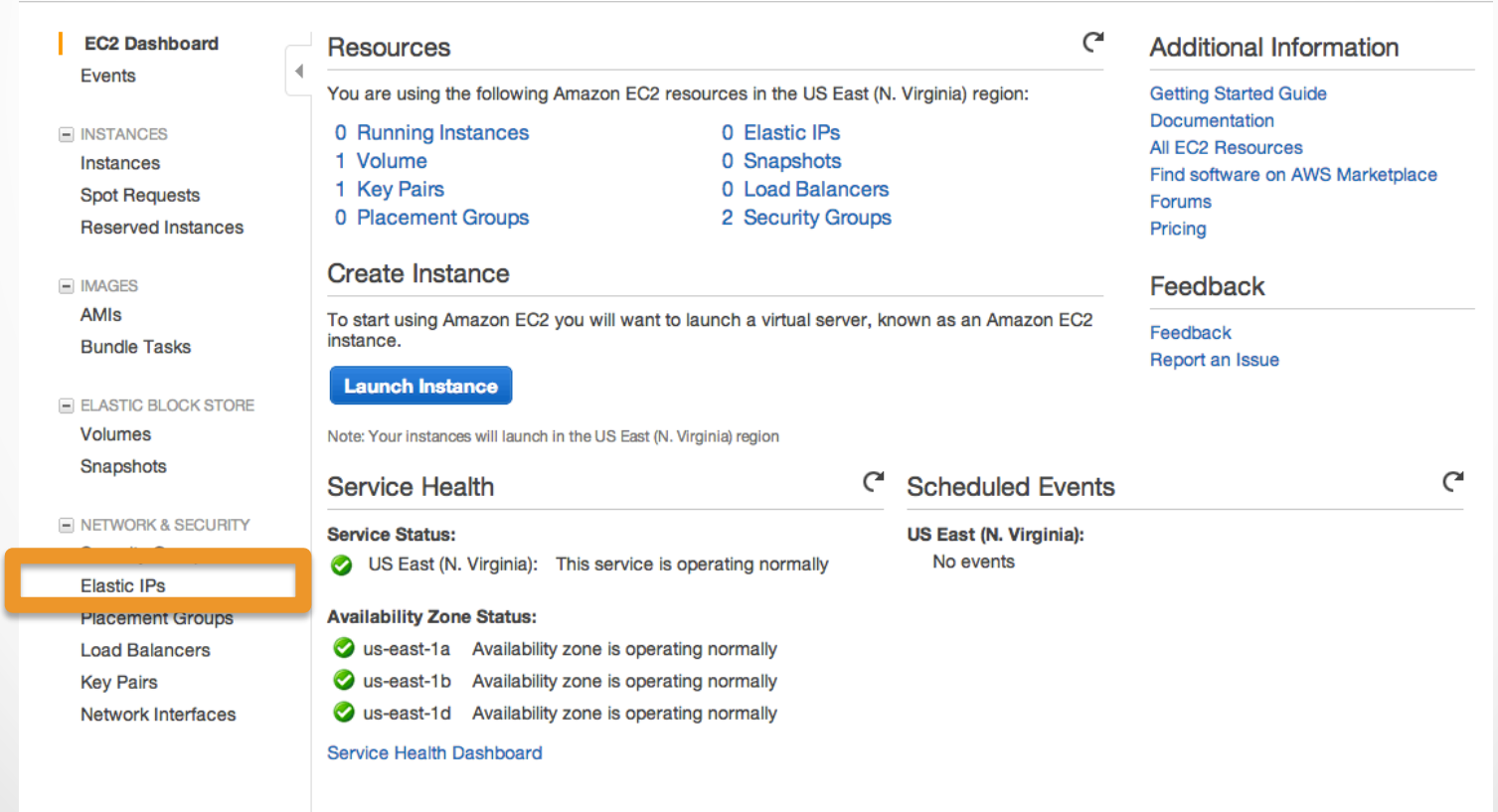
Stop your instance

- When you stop and restart your instance, it gets assigned a new IP/public DNS

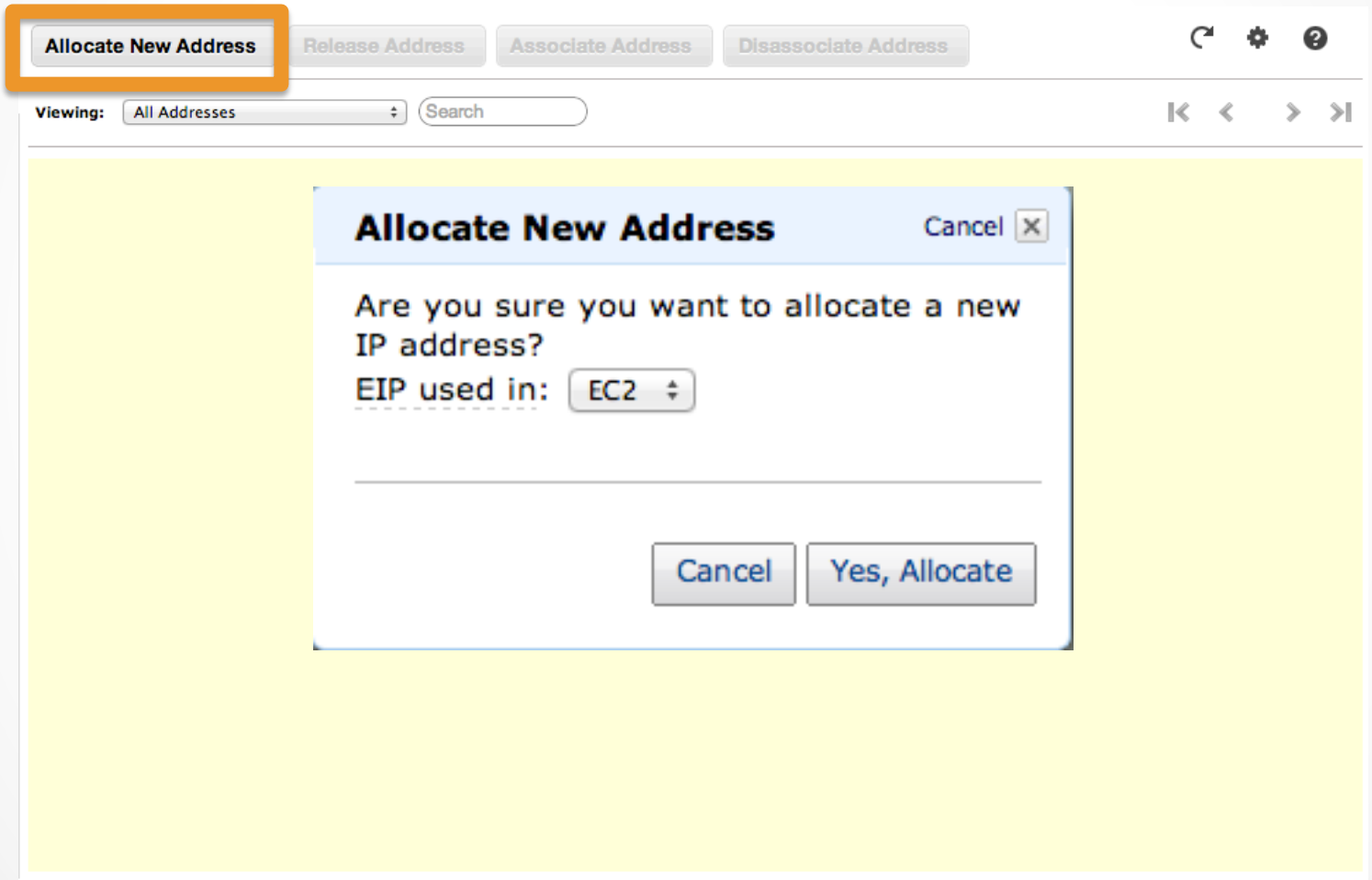


Elastic IPs

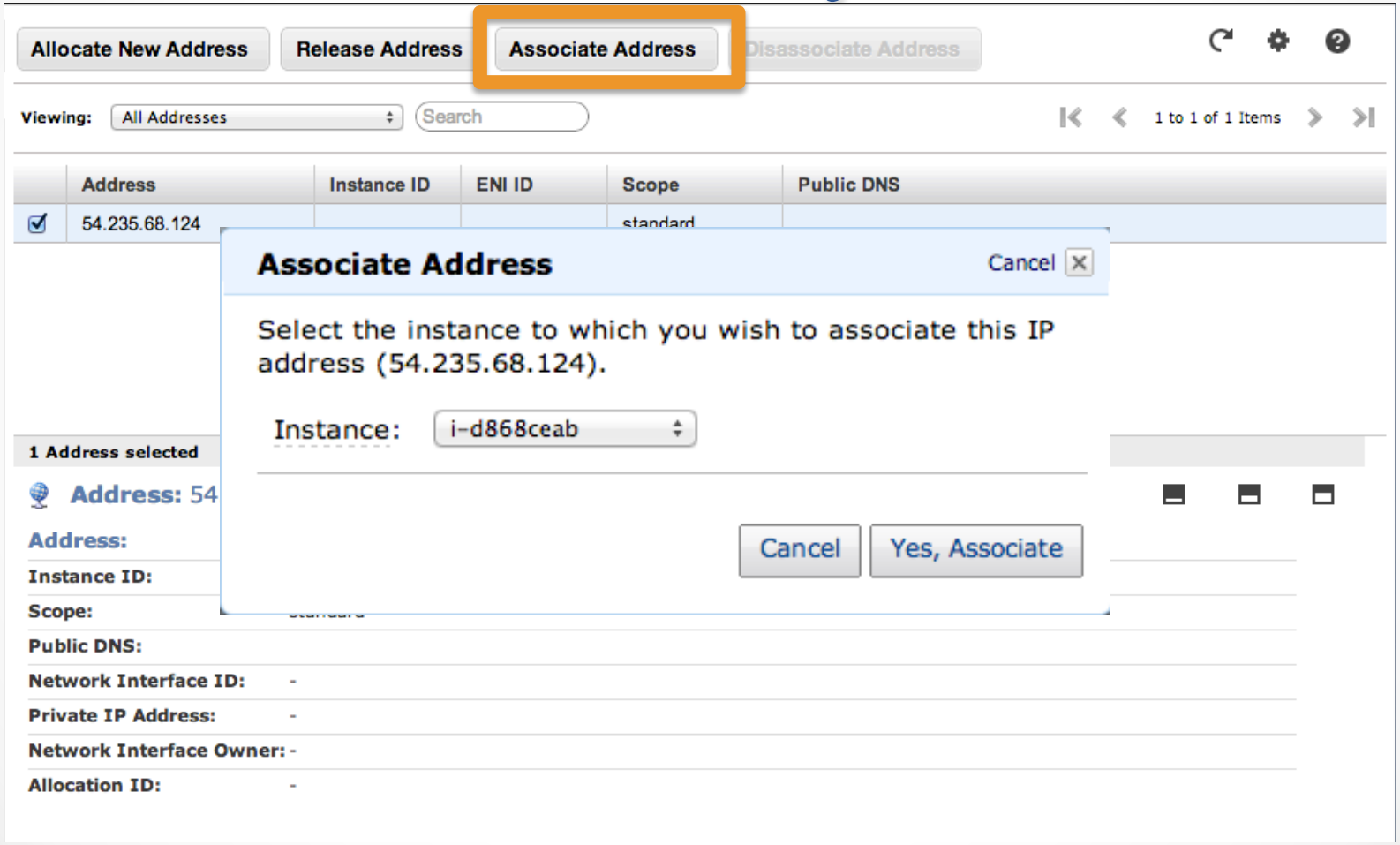
- A configurable IP address assigned to your account
- You assign the IP to any instance you might be running



Allocate Elastic IP



Attach Elastic IP to your instance



The End!