

DSA Course Instance Guide DS220 – Data Modeling with DataStax Enterprise



Table of Contents

OBTAINING AN AWS ACCOUNT	3
STARTING AN INSTANCE	4
AWS Management Console	4
Launching an Instance	6
Choose an Instance Type	7
Configure Instance Details	7
Add Storage	7
Add Tags	7
Configure Security Group	8
Required ports Example security group setting	8 9
SSH Key Pair	10
Finding the IP address of the instance	10
TERMINATING AN INSTANCE	11

Obtaining an AWS Account

You will need your own AWS account, or have one provided from your company or organization in order start up an instance.

To sign up for an AWS account, go to <u>https://aws.amazon.com</u> and click on **Create a Free Account** and follow the instructions there. Although some usage of AWS may be free, DataStax Academy instances do not run on the AWS Free Tier and <u>will cost money</u> to run.



You may find additional documentation about AWS here: <u>https://aws.amazon.com/documentation/</u>

Starting an Instance

AWS Management Console

To start an instance, you will first need to sign into the AWS Management Console at <u>https://aws.amazon.com/console</u>.

After you sign in, make sure to select one of the supported regions, whichever region is closest to you:

US East (N. Virginia) – us-east-1 US East (Ohio) – us-east-2 US West (N. California) – us-west-1 US West (Oregon) – us-west-2 Asia Pacific (Sydney) – ap-southeast-2 EU (Ireland) – eu-west-1



Afterwards click on Services > EC2.



You should now be in the EC2 Dashboard.

aws	Services	∽ Resource Groups ∽ 🍾			¢
EC2 Dashboard		Resources			
Events Taos	4	You are using the following Amazon EC2 reso	ources in the Asia Pacific	(Seoul) region:	
Reports		0 Running Instances		0 Elastic IPs	
Limits		0 Dedicated Hosts		0 Snapshots	
Linito		0 Volumes		0 Load Balancers	
		0 Key Pairs		2 Security Groups	
Instances		0 Placement Groups			
Launch Templates					
Spot Requests		Create Instance			
Reserved Instances		To start using Amazon EC2 you will want to la	aunch a virtual server, kno	own as an Amazon EC2 instance.	
Dedicated Hosts					
 IMAGES 		Launch Instance -			
AMIs		Note: Your instances will launch in the Asia Pacific (S	Seoul) region		
Bundle Tasks					
ELASTIC BLOCK STOR	E	Service Health	୯	Scheduled Events	

Launching an Instance

From the *EC2 Dashboard*, click on the button to **Launch Instance**. Click on the link **Community AMIs**. Using the table below, get the AMI ID for region you are starting the instance in and search for that.

aws	Services ~	Resource Gro	ups 🗸 🔸		¢		Support 👻
1. Choose AMI 2.	Choose Instance T	ype 3. Configure	e Instance 4.	Add Storage	5. Add Tags	6. Configure Security Group	7. Review
Step 1: Choo An AMI is a template can select an AMI pro	that contains the vided by AWS, o	azon Mac software configu	hine Imag ration (operating ty, or the AWS M	ge (AMI) g system, appl Marketplace; o	ication server, r you can sele	and applications) required to ct one of your own AMIs.	Cancel and Exit launch your instance. You
Quick Start		Coereb commun	ity Abdie	~		< < 1 to 50 c	of 104,324 AMIs 🗲 🔀
My AMIs		Search commun	ity Aiviis	X			
AWS Marketplac	e	i a	mzn-ami-hvm	-2018.03.0.2	0180412-x86	_ 64-gp2 - ami-467ca739	Select
		A	mazon Linux AM	2018.03.0.201	80412 x86_64	HVM GP2	64-bit
Community AMIs	← 0	R	oot device type: ebs	8 Virtualization	type: hvm EN	A Enabled: Yes	
 Operating system 	n	i a	mzn2-ami-hvr	m-2017.12.0.	20180328.1->	.86_64-gp2 - ami-f973ab84	Select
Amazon Linux	1	A	mazon Linux 2 L	TS Candidate A	MI 2017.12.0.2	0180328.1 x86_64 HVM GP2	64-bit
Cent OS		B	oot device type: ebs	Virtualization	type: hvm EN	A Enabled: Yes	
Debian	0						

Region	AMI ID
N. Virginia (us-east-1)	ami-050afe9ec27c545f3
Ohio (us-east-2)	ami-0d898609c716a923d
N. California (us-west-1)	ami-0d583ade7fe09191c
Oregon (us-west-2)	ami-0f2bc68d1e53e80f9
Ireland (eu-west-1)	ami-061ed968ce26a15ef
Sydney (ap-southeast-2)	ami-06685e1504e0e4afb

The search should display only one AMI, which you can then choose with the **Select** button.

Quick Start	Q ami-71372511 X	K <	1 to 1 of 1 AMIs	> >
My AMIs	3208 results for "ami-71372511" on AWS Marketola	ice		
AWS Marketplace	Partner software pre-configured to run on AWS			
Community AMIs	DSA DS201 - 6.0.0 - 1523940653 - ami-71372511		Select	
Operating system Amazon Linux	Instance for DS201 DataStax Enterprise Fundamentals with DSE 6.0 Root device type: ebs Virtualization type: hvm)	64-bit	

Choose an Instance Type

In Step 2, select an appropriate instance type to launch. The instance will need at least 4 GB of RAM, with the recommended instance type being **t2.medium**. Once the instance type is selected, click on the button **Next: Configure Instance Details**.

Note: You will be charged to start up an instance and to keep it running. Each instance type has a different cost. Please make sure you choose an instance type appropriate for the amount you are willing to spend. The same instance types in different regions may also be priced differently. A list of instance types and their costs can be found here: https://aws.amazon.com/ec2/pricing/on-demand

Configure Instance Details

In Step 3, you should not need to make any changes here. The course DS220 will need only 1 instance in order to do all of the exercises. After setting the number of instances, click on **Next: Add Storage**.

Add Storage

There is nothing that you are required to do in Step 4, so click on **Next: Add Tags** to proceed if you do not need to add any additional storage.

Add Tags

In Step 5, tags are not required but can be useful to keep track of the instances that you launch. It is recommended to add at least one tag to name your instance.

Click on the button **Add Tag**. Set the **Key** as *Name* and the **Value** to something descriptive, like *DS220 Instance*. You can add additional tags if desired, but once you're done click on the button **Next: Configure Security Group**.

1. Choose AMI	2. Choose Instance Type	3. Configure Instance	4. Add Storage	5. Add Tags	6. Configure Security Group	7. Review			
Step 5: Ac A tag consists of A copy of a tag c Tags will be appli	dd Tags a case-sensitive key-valu an be applied to volumes, ed to all instances and vo	e pair. For example, you instances or both. lumes. Learn more abo	u could define a ta but tagging your A	g with key = Na mazon EC2 res	ame and value = Webserver. ources.				
Key (127 ch	aracters maximum)		Val	ue (255 cha	racters maximum)		Instances (i)	Volumes (i)	
Name			DS2	01 Instance			 2		8
Add another ta	ag (Up to 50 tags ma	ximum)							

Configure Security Group

The security group sets the firewall rules for the instance you are launching. The rules need to be configured to allow you to interact with the instance, whether it is through SSH, DataStax Studio, OpsCenter, or some other application. You can also set additional firewall rules if you want to interact with the instance in a way outside the scope of the exercises.

Required ports

The following table lists all of the possible ports used throughout all of the different DSA course exercises.

Port	Description
22	SSH
80	HTTP
443	HTTPS
4040	Spark Application Web UI
7000	DSE Inter-node Cluster Communication Port
7001	DSE Inter-node Cluster Communication Port (SSL)
7080	Spark Master Web UI
7081	Spark Worker Web UI
7199	JMX
8888	DataStax OpsCenter
8983	Solr Admin Web UI
9042	Native Transport Protocol
9142	Native Transport Protocol (SSL)
9091	DataStax Studio

Example security group setting

Туре	Protocol	Port Range	Source
SSH	TCP	22	0.0.0/0
HTTP	TCP	80	0.0.0/0
HTTPS	TCP	443	0.0.0/0
All ICMP – IPV4	ICMP	0 - 65535	Restrict to security group
Custom TCP Rule	TCP	4040	0.0.0/0
Custom TCP Rule	TCP	7000	Restrict to security group
Custom TCP Rule	TCP	7001	Restrict to security group
Custom TCP Rule	TCP	7080	0.0.0/0
Custom TCP Rule	TCP	7081	0.0.0/0
Custom TCP Rule	TCP	7199	0.0.0/0
Custom TCP Rule	TCP	8888	0.0.0/0
Custom TCP Rule	TCP	8983	0.0.0/0
Custom TCP Rule	TCP	9042	0.0.0/0
Custom TCP Rule	TCP	9142	0.0.0/0
Custom TCP Rule	TCP	9091	0.0.0/0

Once a security group is selected or created, click on the button **Review and Launch**.

SSH Key Pair

In Step 7, you can review the instance settings to check if it is configured properly. If everything looks ok, click on the button **Launch**. A window will pop up to have you select an existing key pair or to create a new key pair.

If you already have an existing key pair set up, and have access to the private key file, then you use that key pair for your instance(s).

If you do not have an existing key pair, select the option **Create a new key pair** and then enter a name for the new key pair. Click on the button **Download Key Pair** and save the private key file to a location that you can remember; you will need that file to SSH into the instance later.

Warning: You should never select the option **Proceed without a key pair**, as this will prevent you from being able to access your instance.

j ·	·····,	
A key pair consists of a public	c key that AWS stores, and a private key file that you store. To	ogether,
hey allow you to connect to y	our instance securely. For Windows AMIs, the private key file is	s required
to obtain the password used t securely SSH into your instant	to log into your instance. For Linux AMIs, the private key file all ce.	ows you to
Note: The selected key pair wi	ill be added to the set of kevs authorized for this instance. Lea	rn more
Note: The selected key pair wi about removing existing key p	ill be added to the set of keys authorized for this instance. Lea pairs from a public AMI.	rn more
Note: The selected key pair will about removing existing key p	ill be added to the set of keys authorized for this instance. Lea bairs from a public AMI.	rn more
Note: The selected key pair will about removing existing key p	ill be added to the set of keys authorized for this instance. Lea bairs from a public AMI. pair	rn more
Note: The selected key pair wi about removing existing key p ✓ Choose an existing key Create a new key pair Proceed withwat a key	ill be added to the set of keys authorized for this instance. Lea bairs from a public AMI. pair	rn more
Vote: The selected key pair wi about removing existing key p Choose an existing key Create a new key pair Proceed without a key p	ill be added to the set of keys authorized for this instance. Lea pairs from a public AMI. pair pair	rn more
Vote: The selected key pair wi about removing existing key p Choose an existing key Create a new key pair Proceed without a key p Lacknowledge that Lacknowledge that Lackno	ill be added to the set of keys authorized for this instance. Lea pair from a public AMI. pair pair	rn more
Vote: The selected key pair wi about removing existing key p Create a new key pair Proceed without a key p attemption of the selected by th	ill be added to the set of keys authorized for this instance. Lea pairs from a public AMI. pair pair ave access to the selected private key file (artem-key-pair.pem)	rn more
Note: The selected key pair wi about removing existing key p Create a new key pair Proceed without a key p 1 acknowledge that I ha that without this file, I won	ill be added to the set of keys authorized for this instance. Lea bairs from a public AMI. pair pair ave access to the selected private key file (artem-key-pair.pem) o't be able to log into my instance.	n more
Vote: The selected key pair wi about removing existing key p Create a new key pair Proceed without a key p 1 acknowledge that I ha that without this file, I won	ill be added to the set of keys authorized for this instance. Lea bairs from a public AMI. pair pair ave access to the selected private key file (artem-key-pair.pem) I't be able to log into my instance.	n more

Once the key pair is selected or created, click on the button Launch Instances.

Finding the IP address of the instance

When your instance(s) launches, you will be transferred to the **Launch Status** page. Click on the link with the instance ID to check out the instance details.



Find the value for **IPv4 Public IP**, which is the IP address of the instance that you will use to SSH, or access files or applications from the web browser.

If the instance is still starting up, the IP address may not be available yet. Wait a few minutes, and then refresh the instance details to see if the IP is available.

Launch Instand	ce 🔻 Connec	Actions *					Refresh	⊕ ♦	?
Q search : i-	0964fa8338097d316	Add filter					Ø K < 1 to	1 of 1 > >	>
Name	 Instance ID 	▲ Instance Type 👻	Availability Zone 👻	Instance State 👻	Status Checks 👻	Alarm Status	Public DNS (IPv4)	IPv4 Public	: IP
DS201 Ins	sta i-0964fa833	8097d316 m3.medium	us-east-1c	🥚 running	2/2 checks	None 🍃	ec2-54-175-167-6.com	54.175.167.6	6
Instance: i-09	964fa8338097d316	(DS201 Instance) Public D	DNS: ec2-54-175-167	-6.compute-1.amaz	zonaws.com				
Instance: i-09	964fa8338097d316 Status Checks	(DS201 Instance) Public D	DNS: ec2-54-175-167	-6.compute-1.amaz	zonaws.com				
Instance: i-09 Description	064fa8338097d316 Status Checks Instance ID	(DS201 Instance) Public D Monitoring Tags i-0964fa8338097d316	DNS: ec2-54-175-167		zonaws.com Public DNS (IPv4)	ec2-54-175-167-	6.compute-1.amazonaws.com		
Instance: i-09	964fa8338097d316 Status Checks Instance ID Instance state	(DS201 Instance) Public D Monitoring Tags i-0964fa8338097d316 running	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4)	ec2-54-175-167- 54.175.167.6	6.compute-1.amazonaws.com		
Instance: i-09	B64fa8338097d316 Status Checks Instance ID Instance state Instance type	(DS201 Instance) Public D Monitoring Tags i-0964fa8338097d316 running m3.medium	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4)	ec2-54-175-167- 54.175.167.6 -	6.compute-1.amazonaws.com		
Instance: i-09	Status Checks Instance ID Instance state Instance type Elastic IPs	(DS201 Instance) Public C Monitoring Tags i-0964fa8338097d316 running m3.medium	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4) IPv4 Public IP IPv6 IPs Private DNS	ec2-54-175-167- 54.175.167.6 - ip-172-31-38-104	6.compute-1.amazonaws.com	88	
Instance: i-09	Status Checks Instance ID Instance state Instance type Elastic IPs Availability zone	(DS201 Instance) Public C Monitoring Tags i-0964fa8338097d316 running m3.medium us-east-1c	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4) IPv4 Public IP IPv6 IPs Private DNS Private IPs	ec2-54-175-167- 54.175.167.6 - ip-172-31-38-104 172.31.38.104	6.compute-1.amazonaws.com		
Instance: i-09	Status Checks Instance ID Instance trype Elastic IPs Availability zone Security groups	(DS201 Instance) Public C Monitoring Tags i-0964fa838097d316 runnig m3.medium us-east-1c automaton. view inbound rules	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4) IPv4 Public IP IPv6 IPs Private DNS Private IPs Becondary private IPs	ec2-54-175-167- 54.175.167.6 - ip-172-31-38-104 172.31.38.104	6.compute-1.amazonaws.com	88	
Instance: i-09	Status Checks Instance ID Instance ID Instance state Instance type Elastic IPs Availability zone Security groups Scheduled events	(DS201 Instance) Public D Monitoring Tags i-0964fa838097d316 running m3.medium us-east-1c automaton. view inbound rules No scheduled events	DNS: ec2-54-175-167	-6.compute-1.amaz	Public DNS (IPv4) IPv4 Public IP IPv6 IPs Private IPs Becondary private IPs VPC ID	ec2-54-175-167- 54.175.167.6 - ip-172-31-38-104 172.31.38.104 vpc-895ba3ec	6.compute-1.amazonaws.com	88	
Instance: i-09	Status Checks Instance ID Instance to Instance type Elastic IPs Availability zone Security groups Scheduled events AMI ID	(DS201 Instance) Public D Monitoring Tags i-0964fa838097d316 running m3.medium us-east-1c automaton. view inbound rules No scheduled events DSA DS201 - 5.1.0 - 14996690	DNS: ec2-54-175-167 s 118 (ami-ec1b18fa)	-6.compute-1.amaz	Public DNS (IPv4) IPv4 Public IP IPv6 IPs Private DNS Private IPs Becondary private IPs VPC ID Subnet ID	ec2-54-175-167- 54.175.167.6 - ip-172-31-38-104 172.31.38.104 vpc-895ba3ec subnet-c8e2bee0	6.compute-1.amazonaws.com 1 9.ec2.internal		

With the IP address, you can SSH to the instance once the instance has reached the running state.

Terminating an Instance

Instances incur a cost while running. When you are done with the exercises, or wish to stop for a period of time, we recommend that you terminate the instance.

aws Services ~ Resource Groups 🗸 * \bigtriangleup EC2 Dashboard Resources 4 Events You are using the following Amazon EC2 resources in the Asia Pacific (Seoul) region: Tags 0 Running Instances 0 Elastic IPs Reports 0 Dedicated Hosts 0 Snapshots Limits 0 Volumes 0 Load Balancers INSTANCES 0 Key Pairs 2 Security Groups Instances 0 Placement Groups Launch Templates Spot Requests **Create Instance Reserved Instances** To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance. **Dedicated Hosts**

In the EC2 page, click on the link Instances to go to the list of instances.

From the list of instances, find the instance you want to terminate. Right-click on that instance, and select **Instance State > Terminate**. The instance will change to the state *shutting-down* and will be completely terminated once the state is *terminated*.

Alternatively, you can also select the instance(s) and then click on the button **Actions > Instance State > Terminate**.

	aws	Services	•	Resource Groups	s v 🔭					
	EC2 Dashboard		Lau	nch Instance 👻	Connect	Action	ns 🖤			
	Events	•								
	Tags		Q,	Name : DS201 Instar	nce 💿 Add f	ilter				
	Reports			Namo	Instance ID			Δva	ilability Zone	Instance State
	Limits			Manie	instance iD		- instance type +	~~~		instance State +
=	INSTANCES			DS201 Instance	i-0964fa8338	097d31	Connect		ast-1c	🥚 running
ī	Instances					_	Get Windows Password			
1	Launch Templates						Launch More Like This			
	Spot Requests						Instance State		Start	
	Reconved Instance	0				_	Instance Settings		Stop	
	neserved instance	0				_	Image		Reboot	
	Dedicated Hosts					_	Networking		Terminate	0.0.0
	Scheduled Instanc	es	Inst	ance: i-0964fa8338	097d316 (DS	201 In:	CloudWatch Monitoring		-54-175-167-6.	compute-1.amazor

Note that terminating the instance will delete all data on the instance. If there is anything that you wish to save, please transfer that data from the instance before terminating.

There is another action called *Stop* that will also shut down the instance but save the EBS disk and allows the instance to start again with the same disk. In general, we <u>do not recommend</u> using this action for the following reasons:

- You are still charged for storage of the EBS disk, although not for the instance itself
- The ephemeral disk is not saved, which is usually where DSE data is stored
- The stopped instance may be assigned a different IP address when you start it again, and will potentially break your DSE configuration